SECTION 00 0101
HRA PROJECT TITLE PAGE

JANUARY 4, 2013

768 ROSE

INVEST SAINT PAUL INITITIVE
NEIGHBORHOOD STABILIZATION PROGRAMS
AND REBUILDING PLAN 2009-2013
PAYNE-PHALEN PLANNING DISTRICT (#5)

OWNER
The Housing and Redevelopment Authority of Saint Paul, Minnesota
25 W. Fourth Street, Suite 1100, St. Paul, MN 55102
Sarah Zorn
651-266-6570
sarah.zorn@ci.stpaul.mn.us

HRA SCOPE WRITER
Cermak Rhoades Architects
275 E. Fourth Street, Suite 800, St. Paul, MN 55101
Michelle Baltus Pribyl
(651)556-8634
mbaltuspribyl@cermakrhoades.com

HRA Construction Manager
Dayton's Bluff Neighborhood Housing Services
823 E. 7th Street St. Paul, MN 55106
Jay Sigvertsen
651-297-6222
jsigvertsen@dbnhs.org

SECTION 00 0110

TABLE OF CONTENTS

END OF TABLE OF CONTENTS

SECTION 00 4002

HRA BID INVITATION

PART 1 GENERAL

1.01 CONTACT TRANSLATION

A. In Hmong - Ceeb toom. Yog koj xav tau kev pab txhais cov xov no rau koj dawb, Amy Filice 651-266-6568;

B. In Spanish - Atención. Si desea recibir asistencia gratuita para traducer esta información, llame a Amy Filice 651-266-6568;

C. In Somali - Ogow. Haddii aad dooneyso in lagaa kaalmeeyo tarjamadda macluumaadkani oo lacag la' aan wac, Amy Filice 651-266-6568.

1.02 PROJECT SUMMARY

A. Project description: This is a Residential Renovation project located at 768 Rose . This project is funded by Neighborhood Stabilization Program through the The Housing and Redevelopment Authority of Saint Paul, Minnesota. This project is not required to conform to Federal and/or Little Davis Bacon requirements.

1.03 NOTICE TO PROSPECTIVE BIDDERS

A. These documents constitute an invitation to bid to General Contractors for the construction of the project described within this bid manual.

1.04 OWNERSHIP INFORMATION

A. The Owner, The Housing and Redevelopment Authority of Saint Paul, Minnesota, hereinafter, referred to as Owner.

B. Owner's Project Manager: Sarah Zorn
   Address: 25 W. Fourth Street, Suite 1100, St. Paul, MN 55102
   Phone Number: 651-266-6570
   Email: sarah.zorn@ci.stpaul.mn.us

1.05 OWNER'S CONSULTANT(S)

Owner's Project Specification Consultant: Cermak Rhoades Architects

1. Specification Writer's Name: Michelle Baltus Pribyl
2. Address: 275 E. Fourth Street, Suite 800, St. Paul, MN 55101
3. Phone Number: (651)556-8634
   Email: mbaltuspribyl@cermakrhoades.com

A. Owner's Construction Manager Consultant: Dayton's Bluff Neighborhood Housing Services

1. Construction Manager's Name: Jay Sigvertsen
2. Address: 823 E. 7th Street St. Paul, MN 55106
3. Phone: 651-297-6222
4. Email: jsigvertsen@dbnhs.org

1.06 IMPORTANT BID DATES

A. Bids Issued: January 4, 2013

B. Mandatory Pre-Bid Site Tour: January 9, 2013 from 2:00PM - 3:00PM

C. **BID DUE DATE ON OR BEFORE:** Wednesday, January 23, 2012 no later than 2:00 PM local time.

D. Bid Delivery Location: The offices of The Housing and Redevelopment Authority of Saint Paul, Minnesota
   Address: 25 W. Fourth Street, Suite 1100, St. Paul, MN 55102

E. Public Bid Opening and Location: The Housing and Redevelopment Authority of Saint Paul, Minnesota
   Address: 25 W. Fourth Street, Suite 1100, St. Paul, MN 55102

F. Executed Contract: Within 30 days of the bid award.

G. Construction Start Date (Approximate): ASAP after contract execution

H. Construction Completion Date: 120 days from the time of issued Notice to Proceed.

1.07 RIGHTS RESERVED BY THE OWNER

A. The owner reserves the right to:
   1. Reject all bids received in response to this Bid Invitation, and at the Owner's discretion, issue a new Bid Invitation.
   2. Amend any portion of this Bid Invitation and disseminate such amendments to potential bidders in the same manner as the original Bid Invitation (e.g. newspaper, online posting). Bidders will be responsible for meeting the requirements of all amendments.
   3. Waive any minor irregularities in bids received.
   4. Disapprove any subcontractor proposed to be used by a bidder based on the subcontractor not being a responsible subcontractor and/or being on a debarment list.
   5. Select more than one bidder to perform various elements of the Project.

END OF BID INVITATION

SECTION 00 4003

HRA INSTRUCTIONS FOR BIDDERS

PART 1 GENERAL BID DIRECTIONS

1.01 EACH BIDDER SHALL FULLY INFORM HIM / HERSELF AND ANY SUBCONTRACTORS PRIOR TO BIDDING AS TO ALL EXISTING CONDITIONS AND LIMITATIONS INCLUDING COMPLIANCE REQUIREMENTS UNDER WHICH THE WORK IS TO BE PERFORMED AND SHALL INCLUDE IN THE BID A SUM TO COVER THE COST OF ALL ITEMS NECESSARY TO PERFORM THE WORK AS SET FORTH IN THE BID PROJECT MANUAL. THE SUBMISSION OF A BID SHALL BE CONSTRUED AS CONCLUSIVE EVIDENCE THAT THE BIDDER HAS MADE SUCH EXAMINATION.

1.02 BID FORMS

A. The Bid Submission forms are available online at http://www.stpaul.gov/nsp.

B. Each bid must be submitted on the Bid Submission forms identified in the provided checklist. It is expected that the Contractor retain a copy of their entire submittal for their records. The copy of the bid submitted must be signed at every place that a signature is requested.

1.03 CORRECTIONS

A. Erasures or other changes in the bid must be dated and initialed over the signature of the bidder.

1.04 BID ENVELOPE

A. Place bid in envelope with the contractor name and address in the upper left-hand corner as the return address, and list the property address in the middle of the envelope as the addressee. Seal envelope.

1.05 INTERPRETATIONS OF SCOPE OF WORK

A. Every request for an interpretation shall be in writing, unless otherwise documented by the Specification Writer. Questions will be taken until 4 days before bids are due.

B. Interpretations will be in the form of an addenda which will be on file at the website, and in the offices of the Specification Writer at least three calendar days before bids are opened.

C. It shall be the bidder's responsibility to make inquiry as to addenda issued.
   1. All such addenda shall become a part of the contract and all bidders shall be bound by such addenda.

1.06 CONFLICT WITH DOCUMENTS

A. When a conflict arises between the Drawings or the Scope of Work, the Drawings shall govern.

1.07 MATERIALS APPROVED:

A. Where items of equipment and material are specifically identified herein by a trade name, model or catalog number, only such specified items may be used in the base bid.

B. Contractors desiring approval of substitute products may submit data cut sheets and product information for approval during the bidding cycle.

C. Contractors will be notified only by addendum of additional approved products.

D. Material identifications made in work specifications are considered as minimal quality for acceptance in bidding and installation.

1.08 ALLOWANCES:

A. The Contractor shall include in the bid proposal the cash allowances listed.

B. Unless otherwise indicated, the lump sum amount shall be for the material / product.

C. Labor to install the material / product must be submitted separately.

1.09 ALTERNATES:

A. The Contractor must submit bids for each alternate listed in the Alternates List.

B. If pricing is not listed for Alternates the bid may be disqualified.

1.10 TIME FOR RECEIVING BIDS:

A. Bids are to be delivered to the HRA's office.

B. Bids received prior to the time of opening will be securely kept.

C. Bids received by phone or fax will not be considered.

D. Modification of bids already submitted will be considered if received prior to the hour set for receiving the bids and written confirmation of such modification - with the signature of the bidder - is placed in the mail and postmarked and / or delivered to the HRA prior to the time set for bid opening.

1.11 OPENING OF BIDS:

A. At the time and place fixed for the opening of bids, every bid received within the time fixed for receiving bids will be opened irrespective of any irregularities.

B. The opening of the bids will be an "open process" (open to the public).

1.12 WITHDRAWAL OF BIDS:

A. Bids may be withdrawn in writing, by phone, or by fax prior to the time fixed for opening; provided that written confirmation of any phoned or faxed withdrawal is placed in the mail and postmarked and / or delivered prior to the time set for bid opening.

B. Negligence on the part of the bidder in preparing their bid confers no right of withdrawal or modification of his bid after such bid has been opened.

PART 2 BID ANALYSIS PROCESS

2.01 CONTRACTOR SELECTION DATE: <u>EARLIEST PRACTICAL DATE</u>

A. This project is funded by the Neighborhood Stabilization Program (NSP), a federal stimulus program created to rehabilitate vacant housing or construct new housing on vacant lots within targeted areas of the City of Saint Paul.

B. The Housing and Redevelopment Authority of Saint Paul, Minnesota reserves the right to check the qualifications of contractors for each project; previous experience working on projects with the The Housing and Redevelopment Authority of Saint Paul, Minnesota, will not automatically deem a contractor qualified.

2.02 MINIMUM CONTRACTOR QUALIFICATIONS

A. Please note the following minimum qualifications that apply to all bidders:

1. **Quality Workmanship and Qualifications**
   a. Three references from jobs with similar work (include on Contractor Qualification form)
   b. Two financial references (included on Contractor Qualification Form)
   c. At least 2 years of experience as a Licensed General Contractor (HRA will verify)
      1) make sure to provide GC license number in the bid documents.
   d. Review of standing with Secretary of State, Federal Excluded Parties list, City of Saint Paul Debarment list, Department of Labor and Industry, Better Business Bureau (HRA will verify)
   e. Houses with historic features or located within a historic district may require demonstration of quality workmanship for historic renovation at the discretion of HRA staff.
2. **Financial Capacity**
   a. Demonstrated ability to pay two months of construction costs for each project awarded (these amounts are added together if more than one project is under construction). Financial capacity documentation must be in the name of the General Contractors organization or the principal of that organization.
      1) For a 120 day project, the contractor shall demonstrate the ability to pay 50% of bid amount.

2) For a 90 day project, the contractor shall demonstrate the ability to pay 65% of the bid amount.
3) Demonstration of capacity can be in the form of:
(a) Line of credit from banking or lending institution
(b) Cash balances from banking or lending institution

3. **Ability to Perform**
a. Up-to-date submittals to Affirmative Action, Section 3, and Vendor Outreach programs.
b. Adherence to timelines confirmed from professional references.
c. Use of certified subcontractors for environmental remediation including:
1) Insulation: contractor must be on Xcel Energy approved contractor list
2) Asbestos: contractor must be certified for asbestos removal by the State of Minnesota
3) Lead: either general contractor or subcontractor must be certified for lead abatement by the State of Minnesota
4) Radon: contractor must be on Minnesota Department of Health approved radon mitigation list.

4. **Bid Award Policy**
a. Contractors that meet the criteria for qualification above, yet have not worked with The Housing and Redevelopment Authority of Saint Paul, Minnesota on a Neighborhood Stabilization Program project previously will initially be awarded one house, even if the contractor is low bidder for more than one house.
b. Once the contractor demonstrates quality workmanship, financial capacity, and ability to perform timely completion, they may be awarded more than one house at the same time for subsequent bids on a case-by-case basis.

5. **Other Qualifications**
a. Each property has its own unique characteristics and challenges. Variables include items relating to environmental conditions, historic nature of structures, etc.
b. Depending on the specific property , there may be other qualifications needed by the bidder which will be specified by the HRA in its request for bids.

PART 3 POST AWARD REQUIRMENTS

3.01 CONSTRUCTION CONTRACT REQUIRMENTS

A. The bidder agrees that, if selected by the HRA, the bidder will enter into a contract with the HRA no later than 30 calendar days from bid award and will submit the following information to the HRA as a condition to entering into that contract; refer to Bid Rehab Manual for attachments:
1. Certificates of Insurance as required by the Construction Contract and proof of Insurance and Bonding.
2. Final Sworn Construction Statement Affidavit and Sworn Construction Statement that list contractors, material suppliers, and subcontractors, who will work under the contract and the cost of their work.
3. Proof of a valid license as a Residential builder in the State of Minnesota and proof of valid licenses as required by the City of Saint Paul for work to be done.
4. Bidders may be required to submit payment and performance bonds as a condition of the construction contract. Verify with Scope Writer prior to submitting bid.
5. Proof of compliance with requirements attached for Affirmative Action, Vendor Outreach Program, and Section 3, including an Acknowledgement and Final Section 3 Action Plan.
6. Construction Schedule must be submitted to the Dayton's Bluff Neighborhood Housing Services to enter into the Contract.

B. Attendance of a Pre-Construction Conference
1. The selected Contractor and all Subcontractors will be required to attend a Pre-Construction Conference.
2. Time, date, and place of the Pre-Construction Conference will be announced by the Dayton's Bluff Neighborhood Housing Services and/or HRA.

C. Computerized System for Compliance Tracking and Reporting:
   1. The Contractor is required to use the B2Gnow/LCPtracker reporting system. Refer to attachment.

PART 3 WAGE REQUIREMENTS

4.01 THE FOLLOWING ARE WAGE REQUIREMENTS ASSOCIATED WITH THIS PROJECTS

A. Federal Davis-Bacon and/or Little Davis-Bacon Wages are not required for this project.

END OF SECTION

SECTION 00 4101

HRA BID SUBMISSION DOCUMENTS

SECTION 1 GENERAL

1.01 BID SUBMISSION DOCUMENTS, LOCATED AT HTTP://WWW.STPAUL.GOV/NSP

A. Bid Submittal Checklist
B. Bid Cover Sheet
C. Bid Proposal and Non-Collusive Affidavit
D. Preliminary Section-3 Action Plan
E. Contractor Application / Statement of Qualifications
F. Itemized Cost Breakdown and Scope of Work Bid (Section 004102)

END OF SECTION

SECTION 00 4102

HRA LINE ITEM BID SHEET

PART 1 MANUAL BID SHEET - LINE ITEM BREAKDOWN OF WORK

DIVISION 01 - GENERAL REQUIREMENTS

01 0010 - HRA General Requirements $_____

01 2300 - Alternates
ALTERNATE #1: ADD Air-conditioning $_____

DIVISION 02 - EXISTING CONDITIONS

022633 - Mold Assessment $_____

024100 - Demolition $_____

028200 - Asbestos Remediation $_____

028313 - Lead Hazard Control Activities $_____

DIVISION 03 - CONCRETE

033000 - Cast in Place Concrete $_____

DIVISION 04 - MASONRY

040100 - Maintenance of Masonry $_____

042300 - Glass Unit Masonry $_____

DIVISION 05 - METALS

057300 - Decorative Metal Railings $_____

DIVISION 06 - WOOD, PLASTICS AND COMPOSITES

061000 - Rough Carpentry $_____

062000 - Finish Carpentry $_____

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

072119 - Foamed-In-Place Insulation $_____

072126 - Blown Insulation $_____

072500 - Weather Barriers $_____

072700 - Air Barrier System $_____

073113 - Asphalt Shingles $_____

074646 - Fiber Cement Siding (Labor) $_____

074646 - Fiber Cement Siding (Materials) $_____

076200 - Sheet Metal Flashing and Trim $_____

077123 - Manufactured Gutters and Downspouts $_____

DIVISION 08 - OPENINGS

081100 - Exterior Insulated Metal Doors and Frames $_____

081429 - Wood Doors $_____

083323 - Overhead Garage Door $_____

085169 - Metal Storm Windows $_____

085213 - Metal-Clad Wood Windows $_____

085313 - Vinyl Windows $_____

DIVISION 09 - FINISHES

090120 - Repair of Plaster and Gypsum Board Surfaces $_____

090160 - Hardwood Flooring Restoration $_____

092116 - Gypsum Board Installation $_____

093000 - Tiling $_____

096219 - Laminate Flooring $_____

099000 - Painting and Coating $_____

DIVISION 10 - SPECIALTIES

105623 - Closet Storage Shelving $_____

107446 - Window Wells $_____

DIVISION 11 - EQUIPMENT

113100 - HRA Residential Appliances $_____

DIVISION 12 - FURNISHINGS

121110 - HRA Mail Box and House Numbers $_____

121111 - Bathroom Furnishings $_____

123530 - Residential Casework $_____

DIVISION 22 - PLUMBING

223000 - Plumbing Equipment $_____

224000 - Plumbing Fixtures and Piping $_____

DIVISION 23 - HEATING, VENTILATING AND AIR CONDITIONING

230000 - Residential Ventilation $_____

235400 - Forced Air Furnace and Ducts $_____

236213 - Forced Air A/C $_____

DIVISION 26 - ELECTRICAL

260001 - Power, Wiring and Devices $_____

265101 - HRA Lighting $_____

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

281600 - Intrusion Detection $_____

DIVISION 31 - EARTHWORK

312200 - Grading $_____

DIVISION 32 - EXTERIOR IMPROVEMENTS

321313 - Concrete Paving $_____

323129 - Wood Fences and Gates $_____

323223 - Segmental Retaining Walls $_____

323129 - Wood Fences and Gates $_____

329223 - Sodding $_____

329300 - Planting $_____

TOTAL **$_____**

END OF SECTION

SECTION 01 0010

HRA GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 CONTRACTOR'S RESPONSIBLITY

A. All labor, material, supplies, tools, or other costs or items needed for complete construction of the project, including permits, temporary facilities, safety, security and utilities during construction, are the responsibility of the Contractor.

B. The General Contractor and each Subcontractor shall inspect the existing conditions that affect its work before starting. Commencing work signifies acceptance of the previous work. All measurements and dimensions indicated in the Drawings and Specifications are to be verified prior to bid submittal and construction.

C. The General Contractor shall be responsible for the coordination of all subcontractors working on, or furnishing material for use on this project. In addition, the General Contractor shall be responsible for the coordination of all work performed under separate contracts.

D. The General Contractor is responsible for the maintenance of the lawn and landscaping, clean up and dispose of fallen leaves and snow removal during the winter. This responsibility begins at the issuance of the notice to proceed and ends with approval of Final Completion.

1.02 CONTRACTOR'S USE OF PREMISES

A. During the construction period the General Contractor and its Subcontractors shall have full use of the premises for construction operations, including use of the site. All use of the site shall be under control and supervision of the General Contractor.

B. General Contractor and its Subcontractors will be limited to construction work between the hours of 7:00 am and 6:00 pm on weekdays and 8:00 am to 4:00 pm on Saturday. Work at any other times will be allowed only with the Owner's and Project Manager's consent.

1.03 MATERIALS & MATERIAL STORAGE

A. The General Contractor shall provide all materials, hardware, and fixtures required to accomplish the Scope of Work, unless otherwise indicated.

B. The General Contractor shall use materials specified throughout unless approved in writing by Owner and Project Manager before ordering and installing.

C. The General Contractor is responsible for verification of all measurements. Materials transported to the job site and stored are the General Contractor's responsibility until installed and accepted by the Owner and Project Manager.

D. The General Contractor shall deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

E. Damaged or stolen materials and equipment must be replaced as part of the work at no additional cost to the Owner. Damaged property that is removed shall belong to the General Contractor, unless otherwise stated in writing.

PART 2 PERFORMANCE REQUIRMENTS

2.01 ENERGY CONSERVATION

A. General
   1. This property must go through Xcel Energy's Home Performance with Energy Star program.
   2. This means that all insulation and HVAC work must be performed by Xcel Energy's approved contractor list.
   3. General Contractors that are on the Home Performance list may choose Subcontractors that are not on the list, but those General Contractors will be held responsible for all work completed.

4. The “Specifications for Energy Improvement Upgrades” provided by the Neighborhood Energy Connection (See appendix) are a part of the Scope of Work for this property.
5. Any discrepancies between the Scope of Work and NEC’s specifications are to be clarified during the bid process.

B. Provide an Energy Efficient Lighting
1. All fixtures should have energy efficient CFLs or LED lamps that are within the maximum wattage allowable.
2. The Owner and Project Manager shall select specific locations of fixtures and switches in each area.
3. All lighting fixtures will be purchased new, unless otherwise indicated in the scope of work.
4. No plastic lighting fixtures are acceptable.
5. No fluorescent tube light fixtures are acceptable in living spaces.
6. Provide light bulbs for all fixtures. All light fixtures are to have color corrected bulbs. Light bulbs that are viewable within fixtures will be a globe or candelabra style CFL.
7. Provide and install lighting fixtures and switches.
8. Review fixtures with Owner and Project Manager prior to installation.
9. All electrical outlets and cover plates are to be replaced throughout the building, unless otherwise indicated in the scope of work.

2.02 ENERGY EFFICIENT APPLIANCES

A. All appliances must be purchased new and be Energy STAR certified or high efficiency models when Energy STAR certification is not possible.

B. High-efficiency appliances meet the following standards:

C. Clothes washers must have a CEE Tier 2 or higher, a minimum Energy Factor of 2.0 or greater, and a water factor 6.0 or less.

D. Clothes Dryers must be a minimum 7.0 cubic feet capacity, have a sensor dry system, and have 5 Temperature Levels - High, Medium High, Medium, Low & Ultra Low

E. Dishwashers must be CEE Tier 2 or higher, with a minimum Energy Factor of 0.68 or greater, and a maximum annual energy use of 325 kilowatt-hours or less.

2.03 LOW FLOW PLUMBING FIXTURES

A. New plumbing fixtures should be water conserving fixtures with a faucet flow rate of 2.0 GPM or less and a commode flush rate of 1.3 GPF or less.

PART 3 PRICE AND PAYMENT PROCEDURES

3.01 SCHEDULE OF VALUES

A. Form to be used: Sworn Construction Statement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Construction Manager for approval.

C. Forms filled out by hand will not be accepted.

3.02 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Construction Manager for approval.

C. Forms filled out by hand will not be accepted.

D. Execute certification/pay application by signature of authorized officer.

E. Submit two copies of each Application for Payment to Construction Manager.

PART 4 CONTRACT MODIFICATION PROCEDURES

4.01 HRA WINTER WORK POLICY

A. The Housing and Redevelopment Authority of the City of St. Paul (HRA) recognizes that there are weather related exterior items that cannot be completed in winter conditions ("Weather Conditional Work"), including but not limited to:
   1. Exterior painting
   2. Sod
   3. Foundation plantings
   4. Rain garden installation
   5. Concrete sidewalks, steps, landings, curbs, garage slabs, and asphalt driveways

B. The HRA defines winter conditions as "temperatures consistently below a high of 50 degrees Fahrenheit". Winter conditions are typically in effect from November 15th through April 15th each year, although there is potential for an earlier or later start and end date depending on weather.

C. In the case of NSP homes where a notice to proceed is issued between October and February, the time parameter of winter conditions could mean that the entire timeline for construction completion (typically 90-120 days) is within winter conditions.

D. It is the responsibility of the contractor to communicate, to the Owner, the exterior line items in the scope of work that are Weather Conditional Work as a component of the timeline submission required prior to issuance of a notice to proceed.

E. Contractors are also responsible for ensuring that all Weather Conditional Work is completed within the manufacturer's or industry standards recommended temperature range.

F. The Contractor is responsible for prioritizing Weather Related Work when winter conditions are not present, in order to complete the house within the construction timeline whenever possible.

G. The HRA's objective is to ensure that remodeling work on NSP projects is substantially complete within the timeline for construction completion (90-120 days) so that the project can be issued a certificate of occupancy and sold to a new homeowner; the contractor is responsible for ensuring that temporary, structurally sound solutions are implemented when Weather Related Work will effect the ability to secure a Certificate of Occupancy.

H. In the event that winter conditions are present throughout the 120 day construction contract period, the HRA will escrow 1 and 1/2 times the cost for Weather Conditional Work (150%), to be completed within 30 days of the end of winter conditions.

4.02 SUBSTITUTIONS

A. Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the General Contractor after award of the Contract are considered to be requests for substitutions.

B. Submit requests according to procedures required for change-order proposals.

C. Substitution requests shall include a complete list of changes or modifications needed in the Scope of Work in order to accommodate the proposed substitution.

D. Provide samples and product data, including drawings and descriptions of products as well as fabrication and installation procedures, where applicable or where requested by the Owner or Project Manager.

E. Indicate the substitution's effect on the Contractor's Construction Schedule, if any. Indicate cost information, including a proposal of the net change, if any, in the Contract Sum. Acceptance will be in the form of a written Change Order signed by the Owner and Project Manager.

PART 5 COMPLIANCE INFORMATION AND REQUIRMENTS

5.01 SEE HRA NSP WEBSITE FOR COMPLIANCE REQUIRMENTS.

A. http://www.stpaul.gov/nsp

B. Review the document labeled: *Section II - Compliance Information and Requirements.*

1. It contains additional information on:
    a. Insurance
    b. B2Gnow/LCP Tracker, Contract Compliance Monitoring System
    c. Vendor Outreach Program
    d. Affirmative Action
    e. Sustainable Green Policy
    f. Section 3
    g. Two Bid Policy
    h. Limited English Policy
    i. Xcel Energy Participating Contractors' List
    j. Radon Mitigation Contractors' List

5.02 SECURITY PROCEDURES

A. General Contractor is responsible for maintaining security of the site, including:
    1. locking buildings at the end of each work day;
    2. boarding window or door openings;
    3. installing security fencing;
    4. providing temporary barricades, bracing or railings;
    5. and any other work or facilities necessary to maintain a safe and secure site, including compliance with all health, safety, building, and other codes and laws.

B. Any tools or materials or other property stored on the site prior to installation are the responsibility of the General Contractor and its Subcontractors are responsible for insuring their own such property against loss by theft or other cause.

5.03 JOB CONDITIONS

A. The General Contractor shall notify the Owner and Project Manager of repair not covered in the Scope of Work that is necessary for satisfactory completion of the Project.

B. Defects that become evident as work progresses shall be reported not concealed.

C. Ensure safe passage of all employees during the course of demolition or other persons as necessary by erecting barriers, bracing, or other temporary supports as required.

5.04 SAFETY AND CLEAN UP

A. The General Contractor must keep the site clean at all times during construction.

B. In no event can debris be stored outside overnight unless it is inside a dumpster.

C. All floors are to be picked up and kept broom clean at the end of the work day.

D. No combustible debris shall be thrown, stored, or burned on the property, adjacent parcels, sidewalks, streets, or alleys.

E. Debris created from work at the property must be disposed of immediately.

F. Any debris caused by the General Contractor or its Subcontractor shall be removed from the work area in the General Contractor’s containers and disposed of off site by the General Contractor.

PART 6 SPECIAL PROCEDURES

6.01 ASBESTOS ABATEMENT,

A. If asbestos is found on this project follow the necessary requirements for proper abatement. A contractor must be licensed by the Minnesota Department of Health to perform asbestos-related work. Asbestos-related work includes the work area preparation, enclosure, removal, or encapsulation of asbestos-containing material.

6.02 LOW VOC, SEE SECTION 01 6116

6.03 LEAD BASED PAINT

A. General Information

1. Projects funded in whole or in part with federal funds must comply with the “Regulation on Lead-Based Paint Hazards in Federally Owned Housing and Housing Receiving Federal Assistance”.
2. Properties built after 1/1/78 and properties needing emergency rehab assistance are exempt from Lead-Based Paint Regulation requirements.
3. All projects receiving over $25,000 of HUD funds per unit for rehabilitation, must abate all Lead-based paint hazards.

B. **Removal Procedures**
   1. Risk Assessments:
      a. A Risk Assessment must be completed by a licensed Lad-Based Paint Risk Assessor on all properties built before 1/1/78 (excluding emergency rehab cases).
      b. The Owner or Project Manager arranges and pays for the Risk Assessment.
      c. The Risk Assessment report will summarize the nature and scope of known lead-based paint hazards.

C. Scope of Work: The Project Manager prepares the Scope of Work incorporating lead hazard reduction work based on the Risk Assessment report.

D. Licensed Lead Abatement Supervisor: Only General or Subcontractors who are State licensed Lead Abatement Supervisors are allowed to bid on projects involving lead hazard reduction work.

E. Project Plan: The General Contractor must prepare a written project plan and communicate it to the Owner and Project Manager. It shall include:
   1. Start-up date and how long the project is expected to last.
   2. Areas to be abated and precautions to take.
   3. A warning to pay attention to the caution signs that are posted by the General Contractor around the project site.
   4. Location of areas that may be restricted.

F. The selected General Contractor performs the work, using lead hazard control measures where indicated in the Scope of Work.

G. The General contractor will notify the Project Manager when work is complete.

H. A Clearance Test for lead-based paint dust is required upon completion of the Lead Based Paint Hazard Reduction Project Plan.
   1. The Clearance Test must be performed by a State licensed Clearance Examiner.
   2. It is the responsibility of the General Contractor to arrange and pay for any and all of the Clearance Tests that may be required. If the Clearance Test indicates lead levels lower than acceptable amounts, the General Contractor’s lead reduction and control work is complete and the final construction payment application may be processed.
   3. If the Clearance Test is found to contain lead levels above an acceptable amount, the General Contractor must clean the work area again and request another Clearance Test at no additional cost to the Owner, until the Clearance Test is passed.
   4. The Final payment application will not be processed until all areas are determined to be free of hazardous lead levels.

I. Additional Information:
   1. General Contractor must obtain and review the following documents, which provide more detailed information on lead paint hazards and reduction and control measures:
      a. Minnesota Department of Lead program, “Safely Working with Lead While Remodeling the Older Home” pamphlet series. 1-651-215-0890.
         1) U.S. Environmental Protection Agency, “Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools” 21 page booklet. <http://www.epa.gov/lead/pubs/rrpamph.pdf>
         2) U.S. Department of Housing and Urban Development, “Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work:”. English and Spanish versions available.

<http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/healthyhomes/lead>

3) U.S. Department of Housing and Urban Development, “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing”. October 1996. <http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/lbp/hudguidelines>
4) U.S. Environmental Protection Agency, “Model Lead-Based Paint Abatement Worker Training Course.” English and Spanish versions available. <http://www.epa.gov/lead/pubs/abateworker.htm>
5) U.S. Environmental Protection Agency, “Lead Safety for Renovation, Repair, and Remodeling: Student Manual”. <http://www.epa.gov/lead/pubs/rrp_8hr_studentmanual_feb09.pdf>

J. Abatement:
1. Component Replacement: The removal of building components that contain lead-based paint. It is most appropriate for items such as doors, windows, trim, and cabinets.
2. Paint Removal: The separation of paint from the substrate using safe heat, chemical, or abrasive methods. It may be done on- or off-site. Abrasive methods can create a great deal of dust, are the most hazardous, and require the greatest care and most thorough clean-up.
3. Enclosure: The installation of a barrier (such as gypsum board or paneling) that is mechanically attached to the building component, with all edges and seams sealed to prevent escape of lead-based paint dust. It is most appropriate for large surfaces, such as walls, ceilings, floors, and exteriors.
4. Encapsulation: The application of a liquid or adhesive material that covers the component and forms a barrier that makes the lead-based paint surface inaccessible by relying upon adhesion. It may be appropriate for many kinds of smooth surfaces but it cannot be used effectively on friction surfaces, surfaces in poor condition, or surfaces that may become wet. It also must be compatible with existing paint.
5. Soil Removal: The removal of at least the top six inches of topsoil is adequate for most projects. In areas with heavy contamination, up to two feet may have to be removed, and must be disposed of using proper waste management techniques that comply with local requirements. The maximum lead concentration in replacement soil shall not exceed 200 ug/g. Sod or seeding of new soil should occur.
6. Soil Cultivation: The mixing of low lead soil with high lead soil is an appropriate method if the average lead concentration of the soil to be abated is below 1,500 ug/g. Thorough mixing is required, and pilot testing of various techniques may be needed to ensure that thorough mixing does occur.
7. Paving: The covering of highly contaminated soil with high quality concrete or asphalt. Paving is common in high traffic areas but not appropriate in play areas. The need for uncontaminated replacement soil is eliminated as is waste disposal costs. Paving often turns out to be the most economical recourse, despite its aesthetic disadvantages.

6.04 WASTE MANAGEMENT, SEE SECTION 01 7419

PART 6 SUBMITTALS

7.01 GENERAL

A. Coordinate preparation and processing of submittals with performance of construction activities.

B. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

C. Provide the following submittals required for performance of the Work, including the following:
1. Administrative Submittals.
2. Construction Schedule
3. Samples/Product Data.

7.02 ADMINISTRATIVE SUBMITTALS

A. Provide as required in the Contract Documents. Such submittals include, but are not limited to, the following:
   1. Sworn Construction Statement
   2. Required permits.
   3. Applications for Payment.
   4. Insurance certificates.
   5. List of subcontractors.

7.03 CONSTRUCTION SCHEDULE

A. A construction schedule must be submitted to the Owner and Project Manager with the bid, unless requested otherwise in writing. Construction shall be completed within 120 days of notice to proceed.

7.04 SAMPLES/PRODUCT DATA:

A. Submit Samples as specified to be physically identical with the material or product proposed.

B. Samples include partial sections of manufactures or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

C. Provide product samples and/or product data for the following where included in the scope of work and for any other requirements mentioned in the specifications or drawings:
   1. Paint colors.
   2. Masonry and mortar color samples.
   3. Windows.
   4. Doors and hardware.
   5. Bathroom accessories.
   6. Kitchen cabinets.
   7. Plumbing fixtures.
   8. Lighting fixtures.
   9. Foundation waterproofing.
   10. Stair railings.
   11. Tile.
   12. Carpet.
   13. Interior trim samples.
   14. Exterior trim and siding samples.

END OF SECTION

SECTION 01 2000

PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

1.02 PAYMENT DOCUMENTS

A. All documents required to create a complete Payment Application can be downloaded from https://sites.google.com/site/nspconstructiondocs/

B. Payment Application form to be used: Application and Certificate for Payment provided by the HRA.
   1. Columns A, B, C should not change during the course of construction and should directly relate to the Sworn Construction Statement provided at the start of construction. As draws progress, columns D, E and F change to reflect work completed.

C. Additional Documents to be submitted with each pay application:
   1. Monthly Employment Utilization (MEU) Form
   2. Identification of Prime and Subcontractor Form
      a. An updated Sub ID sheet must be attached to help HR/EEO staff track subcontractor utilization.
   3. B2Gnow
      a. Ensure each subcontractor is logging into the B2Gnow system and logging payments received.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement. The Owner will process the payment within 30 days.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Construction Manager for approval.

C. Forms filled out by hand will not be accepted.

D. Applications for payment must be signed by an authorized officer of the general construction firm

E. Use data from approved Sworn Construction Statement. Provide dollar value in each column for each line item for portion of work performed.

F. Submit one signed copy of the Application for Payment, complete with all required attachments, to the Construction Manager.

1.04 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Price or Contract Time, Construction Manager will issue instructions directly to Contractor.

B. For changes for which advance pricing is desired, Construction Manager will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 business days.

C. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

D. Execution of Change Orders: Construction Manager will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

E. After execution of Change Order, promptly revise Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.

1. Change orders shall be listed as lump sumps on the bottom of the pay application and referred to on the cover sheet.
2. Include each line item of the change order as a separate line item in the pay application and the amount of the contractor adjustments.

1.05 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.

B. Additional documents:
1. Final lien waivers from all subcontractors/material providers
2. Monthly Employment Utilization (MEU) Form
3. Project Employment Utilization (PEU) for City Funded Projects
4. Lead Clearance
5. NEC Certificate of Completion
6. Waste Management Plan Report
7. Permit Sign-offs/Certificate of Code Compliance
8. Winter Work/Weather Related Work Escrow
9. Certificate of Substantial/Final Completion

C. See Section 01 7700 - Closeout Procedures and Submittals, for additional information.

END OF SECTION

SECTION 01 2300
ALTERNATES

PART 1 GENERAL

1.01 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each alternate.

1.02 SCHEDULE OF ALTERNATES

A. ALTERNATE #1: Provide air-conditioner coil for furnace and condenser on pad, and connect to furnace for complete system.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

B. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Do not use products having any of the following characteristics:

C. Regionally-Sourced Products:
   1. Overall Project Requirement: Provide materials amounting to a minimum of 10 percent of the total value of all materials (excluding plumbing, HVAC, electrical, elevators, and other equipment) that have been extracted, harvested, or recovered, as well as manufactured, within a radius of 500 miles (805 km) from the project site.
      a. This provision is applicable to LEED Credit MR 5.1; show quantity on LEED report.
   2. Specific Product Categories: Provide regionally-sourced products as specified elsewhere.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

C. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

D. Substitution Submittal Procedure:
   1. Submit two copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. The Construction Manager will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Prevent contact with material that may cause corrosion, discoloration, or staining.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 6116

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Implement the following procedures in an effort to improve indoor air quality during Owner's occupancy.

B. Construction Indoor Air Quality (IAQ) Management
   1. Provide low-emitting products

1.02 SECTION INCLUDES

A. VOC restrictions for product categories listed below under "DEFINITIONS."

B. All products of each category that are installed in the project must comply; Owner's project goals do not allow for partial compliance.

1.03 DEFINITIONS

A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site in the building interior:
   1. Adhesives, sealants, and sealer coatings.
   2. Carpet.
   3. Carpet cushion.
   4. Resilient floor coverings.
   5. Wood flooring.
   6. Paints and coatings.
   7. Insulation.
   8. Gypsum board.
   9. Acoustical ceilings and panels.
   10. Cabinet work.
   11. Wall coverings.
   12. Composite wood and agrifiber products used either alone or as part of another product.
   13. Other products when specifically stated in the specifications.

B. Interior of Building: Anywhere inside the exterior weather barrier.

C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.04 REFERENCE STANDARDS

A. CAL (CHPS LEM) - Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.

B. CAL (VOC) - Standard Practice for the Testing of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers (including Addendum 2004-01); State of California Department of Health Services; 2004

C. CRI (GLCC) - Green Label Testing Program - Approved Product Categories for Carpet Cushion; Carpet and Rug Institute; Current Edition.

D. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.

E. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.

F. GreenSeal GS-36 - Commercial Adhesives; Green Seal, Inc.; 2000.

G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

H. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scscertified.com.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All VOC-Restricted Products: Provide products having VOC content of types and volume not greater than those specified in State of California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Current GREENGUARD Children & Schools certification; www.greenguard.org.
      b. Current Carpet and Rug Institute Green Label Plus certification; www.carpet-rug.org.
      c. Current SCS Floorscore certification; www.scscertified.com.
      d. Current SCS Indoor Advantage Gold certification; www.scscertified.com.
      e. Product listing in the CHPS Low-Emitting Materials Product List at www.chps.net/manual/lem_table.htm.
      f. Current certification by any other agencies acceptable to CHPS.
      g. Report of laboratory testing performed in accordance with CHPS requirements for getting a product listed in the Low-Emitting Materials Product List; report must include laboratory's statement that the product meets the specified criteria.

B. Adhesives and Joint Sealants: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No.1168.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.
      b. Published product data showing compliance with requirements.
      c. Certification by manufacturer that product complies with requirements.

C. Aerosol Adhesives: Provide only products having volatile organic compound (VOC) content not greater than required by GreenSeal GS-36.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Current GreenSeal Certification.

D. Paints and Coatings applied within building waterproof envelope:
   1. Comply with VOC Content limits (as noted in Criterion 6.1) of Green Seal Standard GS-11 "Paints," First Edition; Standard GC-03 "Anti Corrosive Paints," and MPI GPS-2-8, as follows (in grams/Liter):
      a. Flat: 50
      b. Non-flat: 50
      c. Anti-Corrosive and Anti Rust: 250
      d. Floor Coatings: 100

E. Carpet and Adhesive: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Current Green Label Plus Certification.
      b. Report of laboratory testing performed in accordance with requirements.

F. Carpet, Carpet Cushion, and Adhesive: Provide products having VOC content as specified in Section 09 6800.

G. Carpet Cushion: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.
   1. Evidence of Compliance: Acceptable types of evidence are:

a. Current Green Label Plus Certification.
b. Report of laboratory testing performed in accordance with requirements.

H. Composite Wood and Agrifiber Products and Adhesives Used for Laminating Them: Provide products having no added urea-formaldehyde resins.
1. Evidence of Compliance: Acceptable types of evidence are:
a. Current SCS "No Added Urea Formaldehyde" certification; www.scscertified.com.
b. Published product data showing compliance with requirements.
c. Certification by manufacturer that product complies with requirements.

I. Other Product Categories: Comply with limitations specified elsewhere.

PART 3 EXECUTION

3.01 GENERAL

A. Incorporate procedures and processes during construction and prior to occupancy as described herein

3.02 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. All additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

SECTION 01 7000

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in Minnesota and acceptable to Construction Manager. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.02 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

D. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

E. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Construction Manager of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Construction Manager the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Construction Manager.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.08 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.09 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.10 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Review Section 01 7700 CLOSEOUT PROCEDURES AND SUBMITTALS.

C. Notify Construction Manager when work is considered ready for Substantial Completion.

D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Construction Manager's review.

E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

F. Notify Construction Manager when work is considered finally complete.

G. Complete items of work determined by Construction Manager's final inspection.

END OF SECTION

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. HRA Policy for this project is dependent on diversion of 50 percent, by weight, of potential landfill trash/waste by recycling and/or salvage.

E. The following recycling incentive programs are mandatory for this project; Contractor is responsible for implementation:

F. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

G. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

A. ACTION SUBMITALS

1. **CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT(CWM) PLAN**
    a. Analysis of estimated job-site waste to be generated, including types and quantities of compostable, recyclable, and salvageable materials.
    b. Description of means and methods to achieve 50 percent diversion requirement for compostable, recyclable, and salvageable materials, including those that may be donated to charitable organizations.
    c. Identification of the carpet product's composition as polymer, nylon or polypropylene
    d. Identification of recycling contractors and haulers proposed for use in the project and locations accepting construction waste materials or entities providing related services.

B. FINAL WASTE MANAGMENT REPORT: General Contractor is responsible to submit at completion of construction and prior to contract close-out, in electronic format.

1. All information required in Waste Management Progress Reports
2. Legible copies of on-site logs, manifests, weight tickets, and receipts.
3. Final calculations, including total amount (by weight or volume) of diverted construction and demolition waste, and the total amount (by weight or volume) of landfilled waste.

C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.

1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
    a. Identification of material.
    b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project disposed of in landfills.
    c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
    d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
    a. Identification of material.
    b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project delivered to incinerators.
    c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
    d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
    a. Identification of material, including those retrieved by installer for use on other projects.
    b. Amount, in tons or cubic yards (cubic meters), date removed from the project site, and receiving party.
    c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.

d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

6. Material Reused on Project: Include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards (cubic meters).
   c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

D. Recycling Incentive Programs:
1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 3 EXECUTION

2.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.

B. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

2.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor and Construction Manager.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
1. Pre-bid meeting.
2. Pre-construction meeting.
3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
1. Provide containers as required.
2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

2.03 UNACCEPTABLE METHODS OF WASTE DISPOSAL

A. Burning or incinerating on or off project site

B. Burying on project site, other than fill.

C. Dumping or burying on other property, public or private, other than official landfill.

D. Illegal dumping or burying.

END OF SECTION

SECTION 01 7700

CLOSEOUT PROCEDURES AND SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

1.02 SUBMITTALS

A. All documents required to create a complete Final Payment Application can be downloaded from https://sites.google.com/site/nspconstructiondocs/

B. Notify Construction Manager when work is considered ready for Substantial Completion.
   1. Make sure the work is mostly complete and cleaned for inspection.

C. Substantial Completion: According to MN Statute Substantial Completion = "when construction is sufficiently completed so that the owner can occupy or use the improvement for the intended purpose"
   1. Submittals: Submit documents listed below to Construction Manager:
      a. Final Pay Application
      b. Monthly Employment Utilization (MEU) Form
      c. Project Employment Utilization (PEU) for City Funded Projects
      d. Lead-based Paint Hazard Clearance Testing
      e. Radon Mitigation Varification Submittal
      f. Energy Modeling/NEC Compliance Report
      g. Final Waste Management Report, see Section 01 7419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
      h. Permit Closeout/Code Compliance
      i. Winter Work/Weather Related Work Escrow
      j. Final Lien Waivers
      k. Material Allowance Reconciliation Change Order (if necessary).

D. Notify Construction Manager when work is considered finally completed. All Punch List items shall be completed and approved by Construction Manager and HRA Project Manager.

E. Final Completion Submittals:
   1. Project Record Documents: Submit documents listed below to Construction Manager:
      a. Building Maintenance Manual and Warranty documents for following:
         1) Appliance and building systems
            (a) HVAC equipment
            (b) Lighting equipment
            (c) Kitchen and Laundry Appliance Manuals
         2) Water-using equipment and controls installed:
            (a) Hot water heater
            (b) Toilets
            (c) Faucets
            (d) Shower head(s)
            (e) Dishwasher
            (f) Clothes washer
            (g) Clothes dryer
      b. Signed Certificate of Substantial Completion
      c. Punch List Items Completed

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 LEAD-BASED PAINT HAZARD CLEARANCE TESTING

A. Where lead-based paint hazard control or reduction work has been performed by the General Contractor, the General Contractor will contact a certified third party Clearance Technician from

Ramsey County Department of Public Health or other certified testing agency for clearance testing.

3.02 ENERGY MODELING (NEC)

A. Contractor must work with the Neighborhood Energy Connection (NEC) who will:
   1. Create an energy model with the building plans and specifications to show the building's projected energy performance in the design stages
   2. Conduct a mid-construction pre drywall thermal enclosure inspection
   3. Verify the final performance of the building with performance testing

3.03 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

END OF SECTION

SECTION 01 8113

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 ENERGY CONSERVATION

A. This property must go through Xcel Energy's Home Performance with Energy Star program.
   1. All insulation and HVAC work must be performed by Xcel Energy's approved contractor list.
   2. General Contractors that are on the Home Performance list may choose Subcontractors that are not on the list, but those General Contractors will be held responsible for all work completed.
   3. General Contractors will be responsible for submitting documentation required of the Home Performance with Energy Star program and will be responsible for achieving Energy Improvements outlined by Neighborhood Energy Connection.
   4. The "Specifications for Energy Improvement Upgrades" provided by the Neighborhood Energy Connection (See appendix) are a part of the Scope of Work for this property.
   5. Any discrepancies between the Scope of Work and NEC's specifications are to be clarified during the bid process.

B. Energy Efficient Lighting
   1. The Owner/Project Manager shall select specific locations of fixtures and switches in each area.
   2. All lighting fixtures will be purchased new, unless otherwise indicated.
   3. No plastic lighting fixtures are acceptable.
   4. No fluorescent tub light fixtures are acceptable in living spaces.
   5. Provide Energy Star certified CFL or LED light bulbs for all fixtures.
   6. All light fixtures are to have color corrected bulbs.
   7. Light bulbs that are viewable within fixtures will be a globe or candelabra style CFL.
   8. Provide and install lighting fixtures and switches.
   9. Review fixtures with Owner prior to installation.
   10. All electrical outlets and cover plates are to be replaced throughout the building.

C. Energy Efficient Appliances
   1. All appliances must be purchased new and be Energy Star certified or high efficiency models when Energy Star certification is not possible.
   2. High-efficiency appliances meet the following standards

1.02 QUALITY ASSURANCE

A. The Neighborhood Energy Connection (NEC), through its Peak Performance Homes custom consulting program, certifies independent consultants who provide developers with specific information about how to increase the energy efficiency of their buildings.

PART 2 PRODUCTS

2.01 LOW-EMITTING MATERIALS

A. Cabinet Materials: Low VOC
   1. Provide wood cabinets with self closing hinges and adjustable shelves from the Schrock Select (available at Menard's), Mid-Continent Cabinetry (available at All Inc), or MINNCOR (available at MINNCOR) design lines or approved equal.
   2. Cabinets are to have plywood sides and bases.
   3. Drawer boxes shall be plywood with dovetail joinery.
   4. Cabinets to be constructed with maple; full overlay doors and flat or 5 piece. Alternative styles may be approval by the HRA.

PART 3 EXECUTION

3.01 CONSTRUCTION WASTE MANAGEMENT

A. Comply with Construction Waste Management and Disposal Plan. Section 01 7419

3.02 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

A. Change all air filters regularly during construction with filters specified for the specific furnace.
   1. Replace all air filters immediately prior to Substantial Completion with the specified permanent filters.

END OF SECTION

SECTION 02 2633
MOLD ASSESSMENT

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Mold can be visually detected throughout basement walls and ceiling.

1.02 SUBMITTALS

A. Proof that the Contractor is qualified to complete mold testing in the State of Minnesota.

B. Test Reports: Visual Inspection Report and Air Quality Report post rehab.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

A. Review the Code Compliance report, included in this Manual.

B. Provide all labor, equipment, material supervision and subcontracting to complete a post construction mold test.

END OF SECTION

SECTION 02 4100

DEMOLITION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. GENERAL

1. Lead-based paint hazards existing in the scope of work for this section. Review the Lead Report, attached in this Manual for locations of lead hazards, and see Section 02 8313 Lead Hazard Control Activies for requirements for lead hazard controls.

B. EXTERIOR

1. Remove all asphalt shingles and underlayment from house and garage roof down to roof sheathing.
2. Remove all gutters and downspouts
3. Remove all exterior doors, storm doors, hardware and door frames. Salvage and protect existing interior casing where noted to remain.
4. Remove Bedroom 2 window.
5. Remove all basement windows down to masonry opening.
6. Remove masonry chimney down to below roof sheathing.
7. Remove all fencing, selected paving and sidewalks, and selected shrubs and trees from site as indicated on the site drawings. Remove retaining wall, steps and handrail at front sidewalk. Remove stone and paver debris all around house and garage. Remove wood platform adjacent to garage.
8. Remove house numbers and mailbox.
9. Remove satellite dishes and cables from exterior of house and patch holes in siding.
10. Remove garage siding down to wall sheathing. Remove all garage windows, doors and frames, windows, trim, fascia, soffit and light fixtures. Remove beam and temporary posts, ladder, and loft decking from within garage. (Existing ceiling joists to remain).
11. Remove all furniture, appliances, construction materials and miscellaneous debris from interior of garage. Properly dispose of all hazardous materials.
12. Remove front porch flooring and subfloor down to floor joists. Remove faux wood paneling below porch windows inside porch on three sides. Remove ACT ceiling, light and window treatments in front porch.
13. Abandon former downspout sewer pipe connections and cap below grade.

C. INTERIOR

1. Remove all carpet, pad, tack strips and adhesive on floors, stairs and walls throughout house.
2. Remove flooring and underlayment in living room and dining room down to original hardwood flooring.
3. Remove wood shoe mould throughout house.
4. Remove all flooring in basement down to concrete slab. Remove all partitions, furring, gypsum board and insulation from basement walls and ceilings down to concrete foundation and floor joists. Remove all basement ceiling finishes, soffits, and lighting. Remove all basement cabinets and shelving.
5. Remove all wallpaper and faux wood paneling from Rear Entry, Bedroom 4, Bedroom 1 and Bedroom 1 closet.
6. Remove faux wood paneling from Living Room beam.
7. Remove closet partition, accessories, ACT ceiling, window casing in Bedroom 1 closet.
8. Remove all window treatments, rods and brackets.
9. Remove all closet shelving, hooks, hook strips and shelving supports.
10. Remove faux wood paneling and casing, shelves, drawers, rod from in Bedroom 3 closet.
11. Remove mirror from second floor hallway.
12. Remove window casing at Bedroom 2 window .

13. Remove all appliances, sink and piping in kitchen. Remove kitchen cabinets, countertop, medicine cabinet, chair rail, base trim, soffits, wall tile, flooring down to subfloor, phone jack.
14. Remove stair handrails and brackets to basement and metal handrail and wood trim strip at second floor stair.
15. Remove appliances and dryer ductwork in basement. Remove laundry tub, water meter piping and cap and abandon piping not to be reused.
16. Remove interior door hardware.
17. Remove Bedroom 4 door and transom to original cased opening.
18. Gut bathroom down to studs and floor joists. Remove all plumbing fixtures and accessories, vanity cabinet, toilet accessories, medicine cabinet, wall and floor tile, gypsum board wall and ceiling. Remove stud walls where indicated on Drawings.
19. Remove all light fixtures and device plates throughout house.
20. Remove all smoke detectors
21. Remove water heater, boiler and tank, baseboard fin tube and piping throughout house.
22. Remove all water and waste piping to basement slab.

1.02 SUBMITTALS

A. Lead Project Plan, see Section 02 8313

B. Lead Test Reports, see Section 02 8313

C. See Section 01 3000 - Administrative Requirements, for submittal procedures.

D. Site Plan: Showing:
   1. Areas for temporary construction and field offices.

1.03 RELATED SECTIONS

A. 02 8200 - Asbestos Remediation

B. 02 8313 - Lead Hazard Control Activities

1.04 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Protect hardwood floors for possible refinishing later.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   6. Do not close or obstruct roadways or sidewalks without permit.
   7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.

D. If hazardous materials are discovered during removal operations, stop work and notify Construction Manager and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
   1. Hazardous materials must be disposed of properly, according to federal, state and local regulations. Provide the Construction Manager with a hazardous waste disposal manifest listing each item disposed of containing hazardous materials and the location and method of disposal, certified by the site accepting the hazardous material.

E. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Inform Project Manager of potential strategies to reuse construction material.
      a. Only move forward with reusing of construction materials with Project Manager's consent.
   2. Dismantle existing construction and separate materials.
   3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.02 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.03 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Construction Manager before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof and secure exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage. Secure all possible access points into building at end of each work day and when work is not in progress on site.

C. Remove existing work as indicated and as required to accomplish new work according to Specifications and Drawings.

D. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02 8200

ASBESTOS REMEDIATION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Refer to the asbestos report included in the appendix of this Manual for an indication of items and surfaces tested for asbestos hazard. No locations were found to be positive for asbestos.

1.02 CONTRACTOR RESPONSIBILITIES

A. Provide all labor, equipment, material supervision and subcontracting for the removal and disposal of all Asbestos-Containing Material (ACM) as specified in the attached Asbestos Test. Remediation must be in compliance with MDH and MN Statutes.

B. When work areas include both friable and nonfriable types of ACM, Contractor's shall prepare work area using procedures for friable asbestos removal.

1.03 SUBMITTALS

A. Proof that the Contractor is qualified to perform Asbestos Remediation in the State of Minnesota.

B. Test Reports: Indicate Complete Remediation of Project.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 LOCATIONS

A. Review the Asbestos report, included in this Manual, for locations tested. No locations were found to be positive for asbestos. However, Contractor shall notify Construction Manager immediately if suspected asbestos-containing materials are found in the construction process.

END OF SECTION

SECTION 02 8313

LEAD HAZARD CONTROL ACTIVITIES

PART 1 GENERAL $_____

1.01 GENERAL INFORMATION

A. Projects funded in whole or in part with federal funds must comply with the "Regulation on Lead-Based Paint Hazards in Federally Owned Housing and Housing Receiving Federal Assistance." As a component of Title X, Sections 1012 and 1013, rehabilitation projects receiving more than $25,000 of federal funds must abate all lead.

B. Properties built after 1/1/78 and properties needing emergency rehab assistance are exempt from Lead-Based Paint Regulations.

1.02 LOCATIONS

A. Review Lead Report, attached in this Manual. Locations identified in the lead report are defined below, with reference to expected finish in other areas of the specification. Contractor is responsible for ensuring treatments meet abatement requirements as defined in federal and state statute.

1. Metal clad window and door trim and troughs: To remain in place except at noted locations. (see Demolition 02 4100 and Sheet Metal Flashing and Trim 07 6200)
2. Garage siding and trim: Remove and replace (see Demolition 02 4100 and Fiber Cement Siding 07 4646)
3. Metal soffits and fascia: To remain in place except at noted locations. (see Demolition 02 4100 and Sheet Metal Flashing and Trim 07 6200).
4. Bathroom walls and ceiling: Remove and replace (see Demolition 02 4100, Gypsum Board Installation 09 2116)
5. Bedroom 1 closet faux wood paneling: Remove and replace with gypsum board(see Demolition 02 4100, Gypsum Board Installation 09 2116)
6. Bedroom 1 door and closet door casing and frame: Remove and replace casing and door stop, strip and refinish frame (see Demolition 02 4100, Finish Carpentry 06 2000, Painting 09 9000)
7. Second floor hallway walls and ceiling: Repair and paint (see Repair of Plaster and Gypsum Board Surfaces 09 0120 and Painting 09 9000)
8. Basement columns: Paint (see Painting 09 9000)

1.03 PRICE AND PAYMENT PROCEDURES

A. Provide a price for the appropriate methods of abatement required by this scope of work.

1.04 SUBMITTALS

A. Project Plan: The General Contractor must prepare a written project plan and communicate it to the Construction Manager, Project Manager, and MN Department of Health. It shall include:

1. Start-up date and how long the project is expected to last.
2. Areas to be abated and precautions to take.
3. A warning to pay attention to the caution signs that are posted by the General Contractor around the project site.
4. Location of areas that may be restricted.

B. Test Reports: Indicate Lead Based Paint Clearance.

1. Submitted at final draw

1.05 QUALITY ASSURANCE

A. Licensed Lead Abatement Supervisor: Only General or Subcontractors who are State licensed to conduct lead hazard reduction work are allowed to bid on projects involving lead hazard reduction work. See Minnesota Statutes 144.9501-144.9512 and Minnesota Rules 4761.2000-4761.2700 for applicable safety precautions, disposal regulations, and other compliance regulations that apply to abatement activities.

B. Per MN Statute, Contractors must provide a 5 day notification to the Minnesota Department of Health prior to beginning lead abatement activities. During lead abatement, a MN Licensed Lead Abatement Supervisor must be on site and workers conducting lead abatement must be MN Licensed Lead Abatement Workers. See the MDH website for additional information:

C. http://www.health.state.mn.us/divs/eh/lead/prof/notification.html

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 ABATEMENT

A. When the Risk Assessment process determines that a Project contains a lead-based paint hazard, the General Contractor shall comply with the abatement measures defined by HUD in 24 CFR Part 35 Subpart A through R 35.1325

http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/enforcement/lshr

and by the EPA in 40 CFR 745.227(e).

http://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol31/pdf/CFR-2011-title40-vol31-sec745-227.pdf

and lead hazard reduction methods defined in Minnesota Statutes 144.9501-144.9512 and Minnesota Rules 4761.2000-4761.2700

http://www.health.state.mn.us/divs/eh/lead/rule.html

B. DEFINITIONS

1. Component Replacement: The removal of building components that contain lead-based paint. It is most appropriate for items such as doors, windows, trim, and cabinets.
2. Paint Removal: The separation of paint from the substrate using safe heat, chemical, or abrasive methods. It may be done on- or off-site. Abrasive methods can create a great deal of dust, are the most hazardous, and require the greatest care and most thorough clean-up.
3. Enclosure: The installation of a barrier (such as gypsum board or paneling) that is mechanically attached to the building component, with all edges and seams sealed to prevent escape of lead-based paint dust. It is most appropriate for large surfaces, such as walls, ceilings, floors, and exteriors.
4. Encapsulation: The application of a liquid or adhesive material that covers the component and forms a barrier that makes the lead-based paint surface inaccessible by relying upon adhesion. It may be appropriate for many kinds of smooth surfaces but it cannot be used effectively on friction surfaces, surfaces in poor condition, or surfaces that may become wet. It also must be compatible with existing paint.
5. Soil Removal: The removal of at least the top six inches of topsoil is adequate for most projects. In areas with heavy contamination, up to two feet may have to be removed, and must be disposed of using proper waste management techniques that comply with local requirements. The maximum lead concentration in replacement soil shall not exceed 200 ug/g. Sod or seeding of new soil should occur.
6. Soil Cultivation: The mixing of low lead soil with high lead soil is an appropriate method if the average lead concentration of the soil to be abated is below 1,500 ug/g. Thorough mixing is required, and pilot testing of various techniques may be needed to ensure that thorough mixing does occur.
7. Paving: The covering of highly contaminated soil with high quality concrete or asphalt. Paving is common in high traffic areas but not appropriate in play areas. The need for uncontaminated replacement soil is eliminated as is waste disposal costs. Paving often turns out to be the most economical recourse, despite its aesthetic disadvantages.

3.02 LEAD-BASED PAINT HAZARD CLEARANCE TESTING

A. Where lead-based paint hazard control or reduction work has been performed by the General Contractor, the General Contractor will contact a certified third party Clearance Technician for clearance testing.

B. The Clearance Technician will conduct a visual assessment of completed work, take dust samples, have dust samples analyzed, and prepare a Clearance Report.

C. If sample results fail, Minnesota rules 4761.2670 subpart 2 and subpart 3 must be repeated. If test results of samples fail to meet clearance standards, surfaces must be retreated or re-cleaned at no additional cost to the Owner until clearance standard is met.

D. When the Clearance Report indicates that clearance standards have been met, and all other requirements of this section have been met, the Construction Manager and Owner will approve the final pay application.

3.03 LOCATIONS

A. Review Lead Report, attached in this Manual. Locations identified in the lead report are defined above with reference to expected finish in other areas of the specification. Contractor is responsible for ensuring treatments meet abatement requirements as defined in federal and state statute.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Patch basement slab where disturbed by plumbing work.

1.02 SECTION INCLUDES

A. Concrete formwork.

B. Concrete reinforcement.

C. Joint devices associated with concrete work.

D. Concrete curing.

E. Vapor barrier under slab on grade.

1.03 RELATED REQUIREMENTS

A. Section 32 1313 - Concrete Paving: Sidewalks, curbs and gutters.

1.04 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).

C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.

D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.

F. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.

G. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.

H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.

J. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.

K. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.

L. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2009b.

M. ASTM C33 - Standard Specification for Concrete Aggregates; 2011.

N. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2011.

O. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2008.

P. ASTM C150 - Standard Specification for Portland Cement; 2011.

Q. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2010b.

R. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.

S. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2010a.

T. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2008a.

U. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2010.

V. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 1999 (Reapproved 2008).

W. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2011.

X. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2008).

Y. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2009.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

C. Footings
   1. 12"x12" thickened edge at garage slab with reinforcing steel as described below, sloped up to meet garage slab at 45 degree slope.

2.02 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
   1. Footings
      a. Two #5 bar, continuous at garage footings.
   2. Type: Deformed billet-steel bars.

B. Steel Welded Wire Reinforcement: ASTM A185/A185M, plain type.
   1. Slab-on-grade
      a. Form: Coiled Rolls.
      b. Mesh Size: 6 x 6 (150 x 150).
      c. Wire Gage: W 4 x W 4 (MW 25 x MW 25).
      d. Contractor option to use fiber reinforcement in lieu of welded wire at garage slabs.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage (1.5 mm).
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I - Normal Portland type.
   1. Acquire all cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33.
   1. Acquire all aggregates for entire project from same source.

C. Fly Ash: ASTM C618, Class C.

D. Water: Clean and not detrimental to concrete.

E. Fiber Reinforcement: Alkali-resistant polypropylene complying with ASTM C1116/C1116M.
   1. Fiber Length: 0.75 inch (19 mm), nominal.

2.04 CHEMICAL ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260.

C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.

D. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 ACCESSORY MATERIALS

A. Underslab and Crawl Space Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
   1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
   2. Products:
      a. Stego Industries, LLC; Stego Wrap Vapor Barrier 15-mil (Class A): www.stegoindustries.com.

B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. ASTM C1107/C1107M; Grade A, B, or C.
   2. Minimum Compressive Strength at 48 Hours: 2,400 psi (17 MPa).
   3. Minimum Compressive Strength at 28 Days: 7,000 psi (48 MPa).

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059 Type II.

B. Slab Isolation Joint Filler: 1/2 inch (13 mm) thick, height equal to slab thickness, with removable top section that will form 1/2 inch (13 mm) deep sealant pocket after removal.
   1. Material: ASTM D1751, cellulose fiber.

2.07 CURING MATERIALS

A. Moisture-Retaining Sheet: ASTM C171.
   1. Curing paper, regular.
   2. Polyethylene film, clear, minimum nominal thickness of 0.0040 in. (0.10 mm).
   3. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide (305 grams per sq. meter).

2.08 CONCRETE MIX DESIGN

A. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

B. Fiber Reinforcement: Add to mix at rate of 3.0 pounds per cubic yard (____ kg per cubic meter), or as recommended by manufacturer for specific project conditions.

C. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 psi (27.6 MPa).
   2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight, typical.
      a. 20 percent at slabs on grade.
      b. 25 percent at footings.
   3. Water-Cement Ratio: Maximum 50 percent by weight.
   4. Total Air Content: 1.5 percent, determined in accordance with ASTM C173/C173M.
   5. Maximum Slump: 4 inches (100 mm).

6. Maximum Aggregate Size: 3/4 inch (19 mm), typical.
    a. 1.5 inch at footings.

2.09 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
    1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.

B. Transit Mixers: Comply with ASTM C94/C94M.

2.10 GRANULAR FILL (UNDER SLAB)

A. Uniform layer of clean aggregate, a minimum of 4" thick. Clean, poorly-graded natural or crushed stone; free from shale, clay, organic materials, debris and recycled crushed concrete; 1/2" to 3/4" clean gravel where there is 100% passing the 1" sieve and 100% retained on the 1/4" sieve.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
    1. Use latex bonding agent only for non-load-bearing applications.

C. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
    1. Vapor Retarder Over Granular Fill: Install granular fill before placing vapor retarder. Do not use sand. Compact fill at 95% maximum dry density according to ASTM D1557, Modified Proctor.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Notify Construction Manager not less than 24 hours prior to commencement of placement operations.

C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

D. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

E. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

A. Anchor joint fillers and devices to prevent movement during concrete placement.

B. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

C. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch (5 mm) thick blade and cut at least 1 inch (25 mm) deep but not less than one quarter (1/4) the depth of the slab.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch (6 mm) in 10 ft (3 m).

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. "Wood float" as described in ACI 302.1R; Garage Foor/Apron.
   2. "Steel trowel" as described in ACI 301.1R; Basement Floor.
   3. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.08 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.09 DEFECTIVE CONCRETE

A. Repair or replacement of defective concrete will be determined by the Construction Manager. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

B. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Construction Manager for each individual area.

END OF SECTION

SECTION 04 0100

MAINTENANCE OF MASONRY

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Repoint and reset limestone foundation to 24” below grade at southwest corner of building, approximately 4 feet each along south and west walls.

B. Cut and Repoint CMU masonry foundation at open and cracked joints all around foundation. Approximately 25% of foundation.

C. Replace CMU foundation at damaged locations. Approximately 5% of CMU.

D. Repair parging over limestone foundation at exposed areas above grade all around building.

E. Tuckpoint and repair chipped and cracked areas of basement foundation wall on interior.

F. Clean existing thin stone veneer on front of house and at front porch.

1.02 SECTION INCLUDES

A. Water cleaning of masonry surfaces.

B. Repointing mortar joints.

C. Repair of damaged masonry.

1.03 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR MATERIALS

A. Mortar to match strength, components, color and consistency of existing mortar.

2.02 MASONRY MATERIALS

A. Block: Match existing CMU dimensions, face profile and color.

PART 3 EXECUTION

3.01 REBUILDING

A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials. Place new masonry level and true to match adjoining existing masonry.

3.02 REPOINTING

A. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch (6 mm) depth or until sound mortar is reached.

B. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch (6 mm) layers. Form a smooth, compact concave joint to match existing.

3.03 CLEANING NEW MASONRY

A. Verify mortar is fully set and cured.

B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Clean existing masonry with compatible brush and water. Do not use harsh chemicals or power washing.

END OF SECTION

SECTION 04 2300

GLASS UNIT MASONRY

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide glass block windows with vent and perimeter frame at all existing basement windows.

1.02 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures; American Concrete Institute International; 2009.

1.03 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 GLASS UNITS

A. Hollow Glass Units: Permanently seal hollow unit by heat fusing joint; with joint key to assist mortar bond.

2.02 ACCESSORIES

A. Vent unit: Heavy duty, vinyl frame with operable insulated glass sash and full insect screen. Nominal 8"h. x 16"w. x same depth as glass block units.

B. Perimeter Channel: Extruded aluminum channel profile, 4-3/4 inch (120 mm) by 1-1/4 inch (32 mm) by 1/8 inch (3 mm) size, one piece per length installed, uncoated finish.

2.03 MORTAR AND POINTING MATERIAL

A. Mortar: Type S with waterproofing admixture.

2.04 MORTAR MIXING

A. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.

PART 3 EXECUTION

3.01 INSTALLATION

A. Shop fabricate glass block panels, using all full block units to fit existing opening sizes. Set vent unit in center of each panel. Mortar joints to be uniform width and tooled concave.

B. Install panel in existing opening with a full bed of mortar at sill and jambs and silicone sealant at head. Tool exposed joints slightly concave when mortar is thumbprint hard.

C. Erect glass units and accessories in accordance with manufacturer's instructions.

END OF SECTION

SECTION 05 7300

DECORATIVE METAL RAILINGS

PART 1 GENERAL $_____

1.01 SUMMARY

A. Provide metal handrail at front steps down to public sidewalk.

PART 2 PRODUCTS

2.01 RAILING SYSTEMS

A. Railings - General: Factory- or shop-fabricated in design indicated, to suit specific project conditions, and for proper connection to building structure, and in largest practical sizes for delivery to site.
   1. Design Criteria: Design and fabricate railings and anchorages to resist the following loads without failure, damage, or permanent set; loads do not need to be applied simultaneously.
      a. Lateral Force: 75 lb (333 N) minimum, at any point, when tested in accordance with ASTM E935.
      b. Distributed Load: 50 pounds per foot (0.73 kN per m) minimum, applied in any direction at the top of the handrail, when tested in accordance with ASTM E935.
      c. Concentrated Loads on Intermediate Rails: 50 pounds per square ft (0.22 per sq m), minimum.
      d. Concentrated Load: 200 pounds (888 N) minimum, applied in any direction at any point along the handrail system, when tested in accordance with ASTM E935.
   2. Assembly: Join lengths, seal open ends, and conceal exposed mounting bolts and nuts using slip-on non-weld mechanical fittings, flanges, escutcheons, and wall brackets.
   3. Joints: Tightly fitted and secured, machined smooth with hairline seams.
   4. Field Connections: Provide sleeves to accommodate site assembly and installation.
   5. Welded and Brazed Joints: Make exposed joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
      a. Ease exposed edges to small uniform radius.
      b. Welded Joints:
         1) Carbon Steel: Perform welding in accordance with AWS D 1.1/D1.1M.
         2) Stainless Steel: Perform welding in accordance with AWS D 1.6.
      c. Brass/Bronze Brazed Joints:
         1) Perform torch brazing in accordance with AWS C3.4/3.4M.
         2) Perform induction brazing in accordance with AWS C3.5/3.5M.
         3) Perform resistance brazing in accordance with AWS C3.9/3.9M

B. Grout / anchoring cement: Premixed, nonshrink, nonmetallic grout.

C. Steel and Iron: At round pipe railings and guardrails: 1-1/2" outside diameter pipe with horizontal rails spaced no more than 5-1/2" o.c.. At Square pipe railing and guardrails: 1-1/2" square posts, 1-1/2 X 1/2 top and bottom rails, 1/2" solid square bar vertical pickets spaced 4" on center maximum. Top rails to be 2'10" above stair nosing and extends 12" at top and bottom of stairs.
   1. Finishes: Prepare raw material by "Brush-Off Blast Cleaning". Rust inhibiting alkyd primer (1 coat and flat black finish (2 coats), applied in ship to all exposed surfaces of metal, even if not normally visible.

PART 3 EXECUTION

3.01 INSTALLATION

A. Comply with manufacturer's drawings and written instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects and with tight joints, except where necessary for expansion.

C. Anchor posts in concrete by inserting into formed or core-drilled holes and grout space between post and concrete.

D. Anchor handrail ends to concrete and masonry with round flanges connected to rail ends and anchored to wall construction will drilled in expansion anchors.

E. Anchor securely to wood structure using plates and bolts to meet design criteria.

F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

G. Isolate dissimilar materials with bituminous coating, bushings, grommets or washers to prevent electrolytic corrosion.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Replace 15% roof sheathing on house and garage. Infill roof sheathing at former chimney location on house.

B. Replace 100% bathroom floor sheathing.

C. Infill floor opening adjacent to chimney at first and second floor with 2x6 at 16" o.c. and 3/4" plywood T&G floor sheathing. See Drawings for approximate extent of existing openings.

D. Provide floor framing and sheathing to infill lower area of Bedroom 1 walk in closet so that entire closet is level with no steps. 2x6 at 16" o.c. and 3/4" plywood T&G floor sheathing. See Drawings for location.

E. Frame 2x4 @16" o.c. walls at modified Bathroom. See Drawings for locations.

F. Frame 2x4@16" o.c. partitions at new supply and return air shafts.

G. Infill framing at former garage window openings not to receive new windows.

H. Replace 25% of front porch floor joists.

I. Provide plywood floor sheathing throughout front porch.

J. Frame openings in existing and new framing to accommodate new attic access panels.

K. Provide roof rafter reinforcement in garage per drawings 1/S1 and 2/S1.

1.02 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Non-structural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Sheathing.

E. Subflooring.

F. Preservative treated wood materials.

G. Communications and electrical room mounting boards.

H. Concealed wood blocking, nailers, and supports.

1.03 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2001.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010b.

C. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.

D. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

C. Provide wood harvested within a 500 mile (805 km) radius of the project site; see Section 01 6000 for requirements for locally-sourced products.

D. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted in lieu of sustainably harvested lumber provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source; see Section 01 6000 for requirements for reused products.

E. Lumber fabricated from recovered timber (abandoned in transit) is permitted in lieu of sustainably harvested lumber, unless otherwise noted, provided it meets the specified requirements for new lumber and is free of contamination; identify source.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Stud Framing (2 by 2 through 2 by 6 (50 by 50 mm through 50 by 150 mm)):
   1. Grade: No. 2.

D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16 (50 by 150 mm through 100 by 400 mm)):

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Subfloor/Underlayment Combination: Plywood, APA PRP-108, Rated Sturd-I-Floor.
   1. Exposure Class: Exterior.
   2. Span Rating: 24 inches (610 mm).
   3. Thickness: 3/4 inches (19 mm), nominal.
   4. Edges: Tongue and groove.

B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch (19 mm) thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Stainless steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions. Provide LU28 face mount hangars manufactured by Simpson.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 (Z550) galvanizing per ASTM A653/A653M.

C. Sill Gasket on Top of Foundation Wall: 1/4 inch (6 mm) thick, plate width, closed cell plastic foam from continuous rolls.

D. Subfloor Glue: APA AFG-01, Waterproof, water base, air cure type, cartridge dispensed.

E. Building Paper: Water-resistant Kraft paper.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft (4.0 kg/cu m) retention.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber exposed to weather.
      c. Treat lumber in contact with roofing, flashing, or waterproofing.
      d. Treat lumber in contact with masonry or concrete.

PART 3 EXECUTION

3.01 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches (38 mm) of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Provide bridging at joists in excess of 8 feet (2.3 m) span as detailed. Fit solid blocking at ends of members.

H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

I. Sill plates to be bolted to foundation wall with 5/8" diameter anchor bolts at 4'-0" O.C. maximum. Bolts to extend 13" minimum into solidly grouted foundation wall. Each sill plate to have a minimum of 2 bolts with one bolt located not more than 12" or less than 4 1/2 inches from each end of the plate section. Use 1/8" x 2" washers, slightly crushing plate.

J. Minimum nailing to be in accordance with Table 2304.9.1 of the IBC.

K. All walls shall have a single bottom plate and double top plate.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.

B. Underlayment: Secure to subflooring with nails and glue.
   1. Place building paper between floor underlayment and subflooring.

3.06 TOLERANCES

A. Framing Members: 1/4 inch (6 mm) from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet (1 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

3.07 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 7419.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 2000

FINISH CARPENTRY

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Lead-based paint hazards existing in the scope of work for this section. Review the Lead Report, attached in this Manual for locations of lead hazards, and see Section 02 8313 Lead Hazard Control Activies for requirements for lead hazard controls.

B. Provide wood base shoe trim at all hardwood floor and laminate floor locations.

C. Provide wood base trim to match existing where missing and at former hot water baseboard locations throughout house.

D. Provide wood base trim and shoe all walls in kitchen, rear entry, and bedroom 4.

E. Provide window casing, jamb extensions and sill trim at bedroom 2 window to match existing.

F. Provide door casing and stop at Bedroom 1 and Bedroom 1 closet to match existing.

G. Patch hardwood flooring at all locations of former pipe penetrations.

H. Salvage newel posts, routed wood handrail/guardrail and balusters at second floor stair for reuse. Add hardwood trim cap below balusters and newels and reinstall newels and guardrail securely above new hardwood trim to raise handrail/guardrail to 36" above stair nosing.

I. Provide wood handrail and brackets at stairway to second floor and at basement stair.

J. Provide 1/2" oak veneer plywood panel to line sides, top and back of built-in recessed shelving adjacent to Bedroom 3 closet. Dado to receive fixed shelves. Provide 3/4" fixed oak veneer shelves with hardwood front edge at built-in recessed shelving. See Drawings for locations.

K. Provide 3/8" MDO access panel, frame and casing at all locations on Drawings marked "AP" or "Access Panel" into attic space(s). R-20 minimum rigid extruded insulation adhered to attic side of access panel. Reinforce with dimensional lumber at perimeter as required for stability and anchorage. Weatherstripping all around panel. 22"x30" minimum access opening.

1.02 SECTION INCLUDES

A. Finish carpentry items.

B. Wood casings and moldings.

C. Wood sheathing.

D. Hardware and attachment accessories.

1.03 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

1.05 RELATED SECTIONS

A. See Section 09 9000 Painting and Coating, for trim finish and color.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Premium Grade.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 6000.

C. Provide wood harvested within a 500 mile (805 km) radius of the project site.

2.03 LUMBER MATERIALS

A. Hardwood Lumber: oak species except where noted, quarter sawn, maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.

1. Baseboard system: 3/4" oak veneer plywood 5" height to match existing with 3/16 Radius shoulder with 2" finger jointed curved base cap molding to match existing profile and height. Total base trim height of approximately 7" to match existing.
2. Window and Door Trim: 4 1/2" head and jamb trim with backband, 3/4" sill, approximately 3 1/2" apron with coved bottom edge. Match existing thicknesses and profiles.
   a. Ease all outside edges with 1/16" radius.
3. Wood shoe mould: 7/16"x3/4" profiled shoe mould.
4. Casing at attic access panels: 1/2"x2 1/2" minimum flat casing with 1/16" eased edges, Pine or other species suitable for painted finish.
5. Misc trim and hardwood edges for shelving, etc: Minimum 3/4" thickness, width as required for application or as indicated on Drawings, ease all outside edges with 1/16" radius.

B. Tongue and Groove Hardwood flooring: Species, width and thickness to match existing. Stagger joints.

2.04 SHEET MATERIALS

A. Hardwood plywood: Face species as indicated, plain sawn, book matched, medium density fiberboard core, HPVA HP-1, Grade AA, type II; glue type as recommmended for application.

B. MDO plywood: sanded 3/8 in. x 4 ft. x 8 ft. Douglas Fir 4-ply MDO P1s

2.05 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.06 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 - Finishing for Grade specified and as follows:

PART 3 EXECUTION

3.01 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Use finish nails of sufficient length to penetrate framing 1".

D. Mitre all lap joints, and break all lap joints over framing.

E. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim to conceal larger gaps.

3.02 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.5 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.7 mm).

END OF SECTION

SECTION 07 2119

FOAMED-IN-PLACE INSULATION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide foamed-in-place insulation at all basement rim joist cavities to R-10.

B. Provide 3" spray foam insulation at bathroom exterior wall, and at back side of second floor knee wall framing between finished spaces and unfinished attic areas. Provide sealant at all joints too small to insert spray foam and around window perimeter on interior edge of window frame

C. Provide thermal barrier coating at all foamed-in-place insulation not covered by gypsum board.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

A. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2006.

PART 2 PRODUCTS

2.01 MATERIALS

A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
   1. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
   2. Closed Cell Content: At least 90 percent.

2.02 ACCESSORIES

A. Thermal barrier: Spray applied coating approved by insulation manufacturer and tested as 15 minute thermal barrier over foamed-in-place insulation.

B. Ventilation chutes: preformed chutes designed to be placed between rafters to provide air ventilation at roof eaves and cathedral ceilings.

PART 3 EXECUTION

3.01 APPLICATION

A. Apply insulation in accordance with manufacturer's instructions. Provide thermal barrier coating over insulation where insulation would otherwise be exposed on interior.

B. Insulate and air seal to rim joist cavities to an R-value of R-10.

C. All knee walls shall have a top and bottom plate or blockers installed using a rigid material. Insulate and air seal knee wall to R-19.

D. Contact the NEC for inspection before covering insulation with finishes.

E. Coordinate placement of insulation adjacent to attic access panels in walls with installation of panels to provide air-tight seal.

END OF SECTION

SECTION 07 2126
BLOWN INSULATION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Dense pack insulation in existing exterior wall cavities from interior except bathroom.

B. Provide ventilation chutes in attic and insulate attic with blown-in insulation at flat areas and dense-pack insulation at sloped finished ceilings.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

A. ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation; 2011.

B. ASTM C1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation; 2006.

PART 2 PRODUCTS

2.01 MATERIALS

A. Loose Fill Insulation: ASTM C739, cellulose fiber type, nodulated for pour and bulk for pneumatic placement.
   1. R-Value: Attic R-50

B. Dense Pack Insulation: Fill Insulation: ASTM C739, cellulose fiber type, nodulated for pour and bulk for pneumatic placement.
   1. R-Value: 19 if possible
   2. Density: 3.5 Lbs. per Cubic Foot for the entire cavity

C. Ventilation Baffles: Formed plastic.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install insulation and ventilation baffle in accordance with ASTM C1015 and manufacturer's instructions between all rafters.

B. Place insulation pneumatically to completely fill stud, joist, and rafter spaces as indicated in Locations above..

C. Drill through existing walls on interior to provide access to stud and rafter cavities. Determine cavities are free of hazards. Control dust when drilling from interior. Dense pack insulation to completely fill stud spaces to a density of 3.5 lbs per cubic foot per cavity as indicated in Locations above.

D. Completely fill intended spaces to a consistent density. Leave no gaps or voids.

E. Carefully seal all drilled holes with wood or gypsum board plugs and patch all holes to match surrounding materials if the surface is exposed.

F. Ensure that blown cellulose is blocked from entering floor cavities such as second floor flooring.

G. ATTIC: Total r-value: R-50 according to NEC requirements.
   1. Dense pack below attic floor and blow above floor to meet R-50 requirement. Blow insulation to depth indicated on manufacturer's coverage chart, consistently and evenly to R-50. Provide baffles or chutes at eaves to maintain the passage of free air. Fill attic areas below baffle to capacity as space allows. Insulation must be marked with a ruler to measure depth and a sign with the number of bags used and the date of installation.
   2. Insulate and weatherstrip horizontal attic hatch(es): Access hatch door shall be insulated to R-50 with rigid insulation and insulation dam constructed around opening. Opening shall be weather-stripped to provide an air tight seal.

END OF SECTION

SECTION 07 2500

WEATHER BARRIERS

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide weather barrier membrane over wall sheathing on entire garage.

B. Provide weather barrier membrane over wall sheathing inside front porch at three walls to receive new siding (former paneling locations).

1.02 SECTION INCLUDES

A. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.03 DEFINITIONS

A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

1.04 REFERENCE STANDARDS

1.05 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

A. Weather Barrier Membrane: Spunbonded polyolefin, non-woven, non-perforated, wether barrier
   1. Manufacturer: DuPont Tyvek HomeWrap or like product to be approved by owner.

B. Seam Tape: DuPont Tyvek or like product

C. Flashing: DuPont Tyvek or like product

D. Fasteners: DuPont Tyvek or like product

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.

C. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturers recommendations.

D. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturers recommended fasteners, spaced 12-18 inches vertically on center along stud line, and 24 inches on center, maximum horizontally.

E. Lap and flash weather barrier on wall and at window and door openings per Manufacturer's instructions and in accordance with window and door manufacturer recommendations.

3.04 FIELD QUALITY CONTROL

A. Do not cover installed weather barriers until required inspections have been completed.

3.05 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 2700

AIR BARRIER SYSTEM (SEALING OF BYPASSES)

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Seal all attic bypasses.

1.02 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in Minnesota.

1.03 DEFINITIONS

A. Bypass: Any break in the envelope of a house between a heated living space and an unheated area or exterior. Bypass locations include, but are not limited to, the following areas: chimneys, soil stacks, end walls, dropped ceilings, open plumbing walls, beneath knee walls and around ductwork, electrical work and attic access points.

PART 2 PRODUCTS

2.01 ADHESIVES AND SEALANTS

A. VOC content not to exceed the following [g/L; less water and less exempt compounds]
   1. Multipurpose construction adhesives: 70 g/L

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Bypasses shall be sealed in such a manner that the movement of air through the bypass is essentially stopped. "Essentially stopped" means that air leakage will not be detected by an infrared scan when the house is pressurized to 30 Pascals.

B. Provide continuous air barriers.
   1. Install continuous interior air barrier around the building
   2. Install continuous external air barrier between all conditioned space and unconditioned space, including attic.

C. Compartmentalization of spaces:
   1. Walls
      a. Seal exterior wall corners with joint sealant [and/or foam]
      b. Seal vertical walls at all penetrations with joint sealant [and/or foam]
      c. Seal window frame with low expanding foam
      d. Seal bottom plates on exterior walls with a foam gasket [and/or caulk, foam]
   2. Floors
      a. Provide complete seal at joists supporting conditioned space with joint sealant [and/or foam]
   3. Ceilings
      a. Install continuous top and bottom plates, and sheathing to create a six-sided air barrier on all attic knee walls and seal with foam [and/or caulk].
      b. Install blocking at exposed edges of insulation at joists and rafters
      c. Truss framing: Install blocking at the top and bottom of each framing bay.
      d. Seal attic hatches with joint sealant [and/or foam].
      e. Install baffles between all rafters or trusses to direct the flow of air over and above the attic insulation.
      f. Recessed lighting when below unconditioned attic: Install insulation contact, airtight rated (ICAT) and seal to drywall with gasket [and/or caulk, foam]

D. Continuity of External Air Barrier
   1. Roof

a. Install 4-inch to 6 inch "peal and seal" self-adhering waterproofing strips over joints in roof decking before installing the roof underlayment and cover.

2. Mechanical work
   a. Seal holes from penetrations from unconditioned spaces with joint sealant and provide flashing.
   b. Seal flue openings with flashing and fire-rated joint sealant
3. Use air sealing with polyurethane caulk for following areas:
   a. Slab openings
   b. Slab penetrations
   c. Control or expansion joints
   d. Sump cover
4. Pest Management Measures
   a. For openings in the building envelope less than 1/4 inch, including pipe and electrical penetrations:
      1) completely seal to avoid pest entry.
   b. Install rodent-and corrosion proof screens for openings greater than 1/4 inch.

SECTION 07 3113
ASPHALT SHINGLES

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide asphalt shingles, drip edge and underlayment at entire house, front porch, and canopy over back door.

B. Provide asphalt shingles, drip edge and underlayment at garage.

C. Provide roof-mounted vents for proper attic ventilation of unheated attic spaces.

1.02 SECTION INCLUDES

A. Asphalt shingle roofing.

B. Flexible sheet membranes for eave protection, underlayment, and valley protection.

C. Associated metal flashings and accessories.

1.03 RELATED REQUIREMENTS

A. Section 07 7123 - Manufactured Gutters and Downspouts.

1.04 REFERENCE STANDARDS

A. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.

B. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2009.

C. ASTM D3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules; 2010a.

D. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007.

E. NRCA MS104 - The NRCA Steep Roofing Manual; National Roofing Contractors Association; 2001, Fifth Edition, with interim updates.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with the recommendations of NRCA Steep Roofing Manual.

PART 2 PRODUCTS

2.01 SHINGLES

A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462; Class A fire resistance.
   1. Self-sealing type.
   2. Manufacturer: GAF ELK, Timberline 30 Year HD shingles
   3. Style: Architectural Shingle.
   4. Color: See Color and Material Selection Form in Appendix.

2.02 SHEET MATERIALS

A. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970; 40 mil (1 mm) total thickness; with strippable treated release paper and polyethylene sheet top surface.
   1. Manufacturers:
      a. Grace Construction Products; Product Ice & water shield.

B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226, Type I ("No.15").

2.03 ACCESSORIES

A. Nails: Standard round wire shingle type, of hot dipped zinc coated steel, minimum 3/8 inch (9.5 mm) head diameter and 0.105 inch (2.67 mm) shank diameter, 1-1/4 inch (31 mm) long.

B. Plastic Cement: ASTM D4586, asphalt roof cement.

C. Ridge Vents: Plastic, formed with vent openings that do not permit direct water or weather entry; flanged to receive shingles; Cobra Rigidvent 2 manufactured by GAF Materials Corporation.

D. Roof Vents: GAF IR-61 super low-profile, slant-back resin roof vents, color to coordinate with shingle roof.

2.04 METAL FLASHINGS

A. Metal Flashings: Provide sheet metal gable edge, open valley flashing, chimney flashing, dormer flashing, and eave drip edge.
   1. Hem exposed edges of flashings minimum 1/4 inch (6 mm) on underside.

B. Sheet Metal: Prefinished aluminum, 0.016 inch (0.4 mm) thick; PVC coating, dark brown color.

PART 3 EXECUTION

3.01 PREPARATION

A. Confirm existing roof sheathing is sound, not water damaged and code compliant for installation of new roofing. Patch and seal existing holes and penetrations.

B. Cut existing sheathing down from ridge on each side of peak to provide opening for ridge vent, being careful not to cut roof framing below.

C. Calculate quantity of roof vents required for code-compliant high and low vents for each attic space and locate cutouts for roof vents evenly spaced in required locations.

3.02 INSTALLATION - EAVE PROTECTION MEMBRANE

A. Install eave protection membrane from eave edge to minimum 4 ft (1 200 mm) up-slope beyond interior face of exterior wall.

3.03 INSTALLATION - VALLEY PROTECTION

A. Install eave protection membrane 18" each side of valleys. Lap ends a minimum of 6 inches in the direction to shed water.

3.04 INSTALLATION - METAL FLASHING AND ACCESSORIES

A. Install flashings in accordance with NRCA requirements.

B. Weather lap joints minimum 2 inches (50 mm) and seal weather tight with plastic cement.

C. Secure in place with nails at 6 inches (152 mm) on center. Conceal fastenings.

D. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.05 INSTALLATION - SHINGLES

A. Install shingles in accordance with manufacturer's instructions.
   1. Fasten individual shingles using 2 nails per shingle, or as required by code, whichever is greater.
   2. Fasten strip shingles using 4 nails per strip, or as required by code, whichever is greater.

B. Project first course of shingles 3/4 inch (19 mm) beyond fascia boards.

C. Extend shingles 1/2 inch (13 mm) beyond face of gable edge fascia boards.

D. Complete installation to provide weather tight service.

END OF SECTION

SECTION 07 4646

FIBER CEMENT SIDING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide fibercement lap siding at entire garage. 4" Corner boards at all corners and 4" trim at garage overhead door, service door and windows.

B. Provide fibercement lap siding inside front porch, three walls (former paneling locations).

C. Provide PVC beadboard and quarter round moulding at front porch ceiling.

1.02 SECTION INCLUDES

A. Fiber cement siding and trim.

B. PVC beadboard and trim.

1.03 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Siding substrate.

B. Section 07 2500 - Weather Barriers: Weather barrier under siding.

C. Section 09 9000 - Painting and Coating: Field painting.

1.04 REFERENCE STANDARDS

A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum 3 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 PRODUCTS

2.01 SIDING

A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
   1. Style: Standard lap style.
   2. Texture: Smooth.
   3. Length: 12 ft (3.7 m), nominal.
   4. Width (Height): 5-1/4 inches (133 mm) at garage. Reveal to match existing siding inside front porch.
   5. Thickness: 5/16 inch (8 mm), nominal.
   6. Finish: Factory applied primer. Primer on cut ends and Finish painting to be applied by contractor.
   7. Warranty: 50 year limited; transferable.
   8. Lap Siding Manufacturers: James Hardie

B. Trim
   1. Fibercement trim:
      a. James Hardie 5/4(1" thick actual) smooth factory primed trim, 12' length. 3 1/2" corner boards and door and window trim.

C. PVC Beadboard and Trim
   1. PVC beadboard: Azek beadboard, 5/8"x3 1/2" beadboard.
   2. PVC trim: 3/4"x3/4"x16' quarter round trim for perimeter of beadboard ceiling.

2.02 ACCESSORIES

A. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch (32 mm).

B. Joint Sealer: Siliconized acrylic sealant between siding and all other components. ASTM C834, Type OP, Grade 18C; single component, paintable.
   1. Product: RCS20 manufactured by Momentive Performance Materials (formerly GE Silicones).

PART 3 EXECUTION

3.01 PREPARATION

A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Verify that weather barrier has been installed over substrate completely and correctly.

C. Do not begin until unacceptable conditions have been corrected.

D. If substrate preparation is the responsibility of another installer, notify Construction Manager of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Install sheet metal flashing:
   1. Above door and window trim and casings.
   2. Above horizontal trim in field of siding.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations.
   1. Read warranty and comply with all terms necessary to maintain warranty coverage.
   2. Use trim details indicated on drawings.
   3. Touch up all field cut edges before installing.
   4. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.

C. Diagonal Siding: Follow manufacturer's instructions.

D. Allow space between both ends of siding panels that butt against trim for thermal movement; seal joint between panel and trim with exterior grade sealant.

E. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.

F. Do not install siding less than 6 inches (150 mm) from surface of ground nor closer than 1 inch (25 mm) to roofs, patios, porches, and other surfaces where water may collect.

G. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 6200

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL **$_____**

1.01 SUMMARY

A. Lead-based paint hazards existing in the scope of work for this section. Review the Lead Report, attached in this Manual for locations of lead hazards, and see Section 02 8313 Lead Hazard Control Activies for requirements for lead hazard controls.

B. Provide prefinished flashing at all new exterior trim, window and door heads at garage.

C. Provide prefinished aluminum vented soffit, metal-wrapped fascia, all around garage.

D. Replace metal-wrapped trim at all south facing windows and at Bedroom 2 window with metal-wrapped trim to match existing trim on other sides of house.

E. Repair damaged area of existing metal siding at one course on east side of house. Resecure siding and eliminate waves and dents over 1/4".

1.02 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.

B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.

D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Aluminum: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick; anodized finish of color as selected.
   1. Clear Anodized Finish: AAMA 611 AA-M12C22A41 Class I clear anodic coating not less than 0.7 mils (0.018 mm) thick.

B. Pre-Finished Aluminum Soffit, Trim and Facia: ASTM B209 (ASTM B209M);.032 inch (.8 mm) thick; plain finish shop pre-coated with modified silicone coating.
   1. Manufacturer: Alsco Perfect Trim Plus

PART 3 EXECUTION

3.01 INSTALLATION

A. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

B. Apply plastic cement compound between metal flashings and felt flashings.

C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

D. Seal metal joints watertight.

END OF SECTION

SECTION 07 7123

MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL **$_____**

1.01 SUMMARY

A. Provide prefinished gutters and downspouts complete with leaders all around house roof, porch and garage.

B. Provide concrete splashblocks at each downspout.

1.02 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.

1.03 DESIGN REQUIREMENTS

A. Conform to applicable code for size and method of rain water discharge.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: To match the exterior trim.

2.02 COMPONENTS

A. Gutters: K style profile, seamless, one-piece aluminum gutter and guard

B. Gutter Guard: seamless, one-piece aluminum gutter and guard

C. Downspouts: SMACNA Rectangular profile.
   1. Size: 3X4

D. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Gutter Supports: Brackets.
   2. Downspout Supports: Straps.

E. Fasteners: Galvanized steel, with soft neoprene washers.

2.03 ACCESSORIES

A. Splash Pads: Precast concrete type, size and profiles indicated; minimum 3000 psi (21 MPa) at 28 days, with minimum 5 percent air entrainment.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

B. Where feasible, a minimum of 6' offset extension shall be installed at the ends of all downspouts to divert water away from foundation.

C. Downspouts shall divert the entire water load in the direction of the rain garden according to the Landscape Plan.

SECTION 08 1100

EXTERIOR INSULATED METAL DOORS AND FRAMES

PART 1 GENERAL $_____

1.01 SUMMARY

A. Provide exterior doors including front and rear house door and garage service door.

B. Provide storm doors at front porch and rear house door.

C. Provide hardware at all new exterior and interior doors.

D. Replace hardware on existing interior doors.

PART 2 PRODUCTS

2.01 EXTERIOR PREHUNG METAL DOOR

A. Front Doors:
   1. Product: Feather River Door, Rochester style A73190

B. Rear/Side Doors:
   1. Product: Mastercraft, Half Lite w/ Blinds - LT-10

C. Garage Service Door:
   1. Product: Mastercraft, 6-Panel - E-1

2.02 ALUMINUM STORM DOORS

A. Front Porch Door
   1. Product: Larson, Oakley, or approved equivalent. Lakeview full lite.

B. Rear/Side Doors
   1. Product: Larson, Oakley, or approved equivalent. Half Lite.

2.03 ACCESSORIES

A. DOOR HARDWARE: Door hardware finish to be Aged Bronze
   1. Front Door Hardware: Schlange Avanti Camelot/Avanti, Schlage 221-409
   2. Interior Door Hardware: Schlange Avanti 221-389
   3. Provide prefinished metal plate at two faces and jamb of all interior doors at new hardware location to cover previous hardware cutouts and door repairs. Finish to match hardware.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine doors and installed door frames before hanging doors.
   1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use a expanding foam to insulate between the door frame and the rough opening.

C. Set units plumb, level, and true-to-line, without warping or racking doors, and with specified clearances; anchor in place.

D. Align and fit doors in frames with uniform clearances set by manufacturer.

E. Seal edges of doors, edges of cutouts, and mortises after fitting and machining

3.03 SYSTEMS INTEGRATION

A. Coordinate with low-voltage security contractor to install contacts in door.

3.04 ADJUSTING

A. Adjust Doors for smooth operation.

B. Operation: Rehang or replace doors that do not swing or operate freely.

END OF SECTION

SECTION 08 1429

WOOD DOORS

PART 1 GENERAL

1.01 LOCATIONS

A. Provide paneled door in existing frame at front entry closet.

B. Provide paneled double door in existing frame at Bedroom 4.

C. Provide paneled door in existing frame at Kitchen.

D. Provide prehung paneled door in frame at Bedroom 1 closet.

E. Adjust all existing and new doors to close properly without binding.

1.02 SECTION INCLUDES

A. Wood doors, stile and rail design.

1.03 QUALITY ASSURANCE

1.04 DELIVERY, STORAGE, AND HANDLING

PART 2 PRODUCTS

2.01 INTERIOR WOOD DOORS

A. Quality Level: Premium Grade , in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Wood products that Emit Low or No Formaldehyde

C. Wood products that Emit Low or No VOC

D. Interior Doors: 1-3/8 inches (35 mm) thick unless otherwise indicated; solid lumber construction; mortised and tenoned joints.
   1. Wood: Oak
   2. Door Type: 6-panel style to match existing, hung in existing frame.

2.02 DOOR FACINGS

A. Interior Doors: Wood veneer, oak species, plain sliced, with book matched grain, for transparent finish.

B. Adhesive: Type I - waterproof.

2.03 ACCESSORIES

A. Molding: Wood, of same species as door facing, match existing shape, mitered corners; prepared for countersink style tamper proof screws.

B. Adhesives and Sealants: VOC content not to exceed the following [g/L; less water and less exempt compounds]:
   1. Multipurpose Construction Adhesives: 70g/L

C. Hinges to match the lockset

D. Door stop

PART 3 EXECUTION

3.01 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and AWI/AWMAC Quality Standards requirements.

B. Trim door width by cutting equally on both jamb edges.

C. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).

D. Machine cut for hardware.

E. Coordinate installation of doors with installation of frames and hardware.

F. Provide undercut at Bedroom and Bathroom doors to accommodate HVAC return air to central return at each floor.

3.02 TOLERANCES

A. Conform to specified quality standard for fit, clearance, and joinery tolerances.

END OF SECTION

SECTION 08 3323
OVERHEAD GARAGE DOORS

PART 1 GENERAL

1.01 LOCATIONS

A. Provide two overhead doors and tracks at garage.

B. Provide two garage door openers and two remotes.

1.02 REFERENCE STANDARDS

A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.

B. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC; National Electrical Manufacturers Association; 2000 (R2005).

PART 2 PRODUCTS

2.01 OVERHEAD GARAGE DOORS

A. Exterior Garage Doors: Steel paneled prefinished overhead door.
   1. Guides: Formed track; Manufacturer's standard.
   2. Electric operation.
   3. Mounting: Within framed opening.
   4. Exterior lock and latch handle.
   5. Door Insulation: Uninsulated.

2.02 ELECTRIC OPERATION

A. Electric Operators: Chain Drive Garage Door Opener
   1. Motor Rating: 1/3 hp (250 W); continuous duty.
   2. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   3. Controller Enclosure: NEMA 250 Type 1.
   4. Opening Speed: 12 inches per second (300 mm/s).
   5. Brake: Adjustable friction clutch type, activated by motor controller.
   6. Manual override in case of power failure.

B. Control Station: Standard three button (OPEN-STOP-CLOSE) momentary control for each operator.
   1. 24 volt circuit.

C. Safety Edge: Located at bottom of curtain, full width, electro-mechanical sensitized type, wired to stop operator upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Complete wiring from disconnect to unit components.

3.02 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.03 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION

SECTION 08 5169
METAL STORM WINDOWS

PART 1 GENERAL

1.01 SUMMARY

A. Replace all storm windows in front porch.

B. Repair operating sash and replace screens in 4 existing storm windows on house.

1.02 SECTION INCLUDES

A. Aluminum Storm Windows

1.03 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; American Architectural Manufacturers Association; 2008.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Two track double hung, with easily removable sashes and half screens; clear glass; pocketed head, jamb and sill; interlocking top and bottom sash; operating window sash locks; butt-joint corners and tubular frame design, metal screen fabric, double wool pile weatherstripping.

B. Finish
   1. Prefinished, four color options.

2.02 MANUFACTURERS

A. Larson Manufacturing Company; Product, Larson Gold Series: www.larsondoors.com

PART 3 EXECUTION

3.01 PREPARATION

A. Remove existing storm window frames entirely. Clean out and prepare existing window frame to receive new storm window.

3.02 INSTALLATION

A. General: Install per manufacturers written instructions.

B. Set frame in continuous bead of silicone sealant. Set frame plumb, level, and true to line, without warp or rack of frames and panels. Fasten to window frame with long screws.

3.03 ADJUSTING

A. Adjust operating panels, screens, and hardware for a tight fit at contact points and weatherstripping for smooth operation and weathertight closure.

B. Reinstall or replace windows whose parts cannot be removed and reinstalled easily and that do not operate smoothly.

3.04 CLEANING

A. Clean Up: Clean units and glass after installation. Remove and dispose of debris from installation.

END OF SECTION

SECTION 08 5213

METAL-CLAD WOOD WINDOWS

PART 1 - GENERAL

1.01 LOCATIONS

A. Provide egress-compliant awning window in Bedroom 2 window opening. Flash rough opening and windows following window and Tyvek manufacturer recommended procedures and products.

1.02 SECTION INCLUDES

A. This Section includes:
   1. Clad wood windows.
   2. Refer to Drawings for window types and rough opening sizes. Field measure rough openings prior to ordering windows.

1.03 RELATED REQUIREMENTS

A. Section 061000- Rough Carpentry for rubberized sheet flashing, flexible rubberized flashing and beveled wood shims for window opening preparation and flashing.

1.04 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; American Architectural Manufacturers Association; 2008.

1.05 PERFORMANCE REQUIREMENTS

A. Performance Ratings: Meet AAMA/WDMA performance ratings as follows: minimum ODP 80 for air infiltration, DP40 for water infiltration, and DP40 for structural performance. Unit U-value of 0.35.

1.06 SUBMITTALS

A. Product data for windows and flashing.

B. Shop drawings and details.

C. Color samples.

PART 2 - PRODUCTS

2.01 CLAD WOOD WINDOWS

A. Basis of Design: Window specifications are based on products manufactured by Marvin Windows.

B. Windows: Kiln dried wood, pre-primed and suitable for painted finish; water repellent and preservative treated; clad on the exterior with 0.055-inch thick extruded aluminum; sash corners slot and tenoned. Extrusion for frame may be different color than sash. Double hung type with top sash factory fixed in place for single-hung function, except fixed windows where indicated on Drawings. Operable sash may be tilted inward 90 degrees from bottom. Furnished with snap-on nailing fins or masonry clips where noted on drawings.

C. Glass: Clear insulating Low E Maximizer Plus glass, 3/4” thick with a low-conductance spacer, argon filled. Fixed in place with interior, removable wood stops. Provide tempered glass in windows in hazardous locations as defined in International Residential Code. Solar heat gain coefficient of 0.33 maximum.

D. Finish: Exterior aluminum cladding, available in 50 standard colors, conforming to AAMA 2604. Interior pre-primed wood to be finished under Section 09900 - Painting. Color to be selected from manufacturer’s current full range of colors without limitation.

E. Window Hardware:
   1. Awning hardware: Manufacturer's standard crank and locking mechanism, hardware finish to match existing.

F. Screens: Provide screens on all operable windows. Half screen only on all single-hung windows (lower sash only). In lieu of standard fiberglass mesh cloth on screens, equip units with charcoal gray coated aluminum mesh insect screens on operable sashes.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Preparation: Prepare exterior sheathing and opening with air barrier and flashing as recommended by Manufacturer. Verify that size of rough opening vertically and horizontally is sufficient to allow for window unit, air barrier, flashings, shims, window anchorage accessories, chinking and sealant, etc. per window manufacturer's requirements.

B. Installation: Comply with manufacturer's instructions. Set sash units plumb, level, and true to line, without warp or rack of frames and panels. Provide support and anchor tracks securely in place. Provide flashings, chinking and sealant as recommended by Manufacturer.

C. Adjust operating sashes, screens, and hardware for a tight fit at contact points and weatherstripping for smooth operation and weathertight closure.

END OF SECTION

SECTION 08 5313

VINYL WINDOWS

PART 1 GENERAL $_____

1.01 SUMMARY

A. Provide single hung windows at garage window openings to remain. Flash rough opening and windows following window and Tyvek manufacturer recommended procedures and products

1.02 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; American Architectural Manufacturers Association; 2008.

1.03 PERFORMANCE REQUIREMENTS

A. Unit U-value of 0.35.

PART 2 PRODUCTS

2.01 COMPONENTS

A. Manufacturer: Thermo-Tech

B. Windows: Extruded, hollow, tubular, ultra-violet resistant polyvinyl chloride (PVC) with integral color; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
   1. Performance Requirements: AAMA/WDMA/CSA 101/I.S.2/A440 R15.
   2. Configuration: single hung sash.
   3. Color: white.

C. Insect Screens: 14/18 mesh, steel strands.

D. Fasteners: Stainless steel.

E. Glass: Manufacturer's translucent glass.

2.02 ADHESIVES AND SEALANTS

A. VOC content not to exceed the following [g/L; less water and less exempt compounds]:
   1. Multipurpose Construction Adhesives: 70 g/L
   2. Structural Glazing Adhesives: 100 g/L

2.03 HARDWARE

A. Casement hardware: Manufacturer's standard crank mechanism, hardware finish to match existing.

B. Hardware: Integral vinyl lift, die-cast sash lock in white finish, Manufacturer's standard track and balance system.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install window units in accordance with manufacturers instructions.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

D. Insulate any voids between the window frame and the rough opening with foam insulation.

3.02 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.03 APPLICATIONS

A. Water Management: Walls, Exterior Windows
   1. Provide weather-resistive barrier/housewrap
   2. Provide pathway for liquid water to exit exterior wall assembly

3. Provide pan flashing, side flashing, and head flashing

END OF SECTION

SECTION 09 0120

REPAIR OF PLASTER AND GYPSUM BOARD SURFACES

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Lead-based paint hazards existing in the scope of work for this section. Review the Lead Report, attached in this Manual for locations of lead hazards, and see Section 02 8313 Lead Hazard Control Activies for requirements for lead hazard controls.

B. Patch all walls disturbed by plumbing, electrical and other work.

C. Patch walls and ceilings disturbed by installation of ductwork and hvac grilles.

D. Repair approximately 12 sf area damaged plaster wall in second floor hallway adjacent to bathroom and approximately 10 lf cracks in various locations. Skimcoat hallway walls.

E. Repair missing plaster in Bedroom 3 ceiling.

F. Patch small holes in walls and ceiling Bedroom 2.

G. Skimcoat plaster walls and ceilings in all bedrooms.

H. Repair plaster at beam in Living Room.

1.02 SUMMARY

A. This section covers surface repairs of plaster and gypsum board surfaces.

B. Finish surface type should be smooth unless otherwise indicated.

PART 2 PRODUCTS

2.01 ACCESSORIES

A. Galvanized metal lath

B. Joint Compound

C. Plaster

D. Plastic Tarps

PART 3 EXECUTION

3.01 REPAIR

A. Walls and Ceilings: Repair interior surface(s) so that finish surface is smooth, even and properly prepared for finish application.
   1. Protect adjacent finished surfaces by covering with plastic or tarps.
   2. Install galvanized metal lath (weight per city code) over area of back up as required. May also secure with screws and inserted piece of gypsum board in areas to be patched.
   3. Before applying scratch coats, dampen areas to reduce absorption from joint compound/plaster.
   4. Apply finish coat and bring to thickness flush with surrounding surface.
   5. The interior temperature must be no less than a minimum 60 degrees during this work.

END OF SECTION

SECTION 09 0160

HARDWOOD FLOORING RESTORATION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Refinish hardwood floors where existing: living room, dining room, stair, second floor hallway, and all bedrooms.

1.02 RELATED SECTIONS

A. See Section 099000 Painting and Coating.

B. See Section 01 6116 Volatile Organic Compound Content Restrictions

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 RESTORATION

A. Restore hardwood floors: Counter sink all nails and fill holes. Remove the quarter round molding and protect the wall molding with painters tape. Drum sand and edge floor finishing with 120 grit sandpaper to completely remove the existing finish. Vacuum and wipe floor with slightly water dampened rag, until no dust is present.

B. Apply a coat of Minwax Low-VOC Water Based Polyurethane base coat followed by 3 coats of Minwax Low-VOC Water Based polyurethane for floors.
   1. Product may not exceed 250 grams of VOC per Liter

END OF SECTION

SECTION 09 2116
GYPSUM BOARD INSTALLATION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide gypsum board finish on new partitions and shaft walls.

B. Provide gypsum board finish on bathroom walls and ceiling. Provide backer board in lieu of gypsum board at tile.

C. Provide gypsum board finish on Bedroom 1 closet walls and ceiling.

D. Provide metal framing and gypsum board at kitchen soffits.

1.02 SECTION INCLUDES

A. Metal stud wall framing.

B. Gypsum wallboard.

C. Joint treatment and accessories.

1.03 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).

B. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2009a.

C. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009a.

D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2008.

E. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2010.

F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

G. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 1999 (Reapproved 2010).

H. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2009a.

I. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
   1. See PART 3 for finishing requirements.

2.02 METAL FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf (240 Pa).
   1. Furring channels: Z shaped, 2" depth

2.03 BOARD MATERIALS

A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.

2. Thickness:
    a. Vertical Surfaces: 1/2 inch (13 mm).
    b. Ceilings: 1/2 inch (13 mm).

B. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
    a. Thickness: 1/2 inch (12.7 mm).
    b. Products:
        1) James Hardie Building Products, Inc; Hardibacker Cement Board.

2.04 ACCESSORIES

A. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
1. Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners, except as otherwise indicated.
2. Ready-mixed vinyl-based joint compound.
3. Powder-type vinyl-based joint compound.
4. Chemical hardening type compound.

B. Screws for Attachment to Steel Members Less Than 0.03 inch (0.7 mm) In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.

C. Screws for Attachment to Steel Members From 0.033 to 0.112 inch (0.8 to 2.8 mm) in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Studs: Space studs as permitted by standard.
1. Extend partition framing to structure where indicated and to ceiling in other locations.
2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

3.04 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

SECTION 09 3000

TILING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide tile floor in front porch, kitchen and at rear entry.

B. Provide tile backer board in tub area and at tile wainscot in bathroom.

C. Provide ceramic tile tub surround and base in bathroom. See drawings for tile height.

D. Provide tile floor in bathroom.

1.02 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Cementitious backer board as tile substrate.

D. Stone thresholds.

E. Ceramic accessories.

F. Ceramic trim.

1.03 REFERENCE STANDARDS

A. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2009.

B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2010.

C. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar; 1999 (R2010).

D. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex Portland Cement

E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009.

F. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (R2010).

G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (R2010).

H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (R2010).

I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (R2010).

J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (R2010).

K. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (R2005).

L. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2008.

M. TCNA (HB) - Handbook for Ceramic Tile Installation; 2011.

1.04 QUALITY ASSURANCE

A. Maintain one copy of The Tile Council of North America Handbook and ANSI A108 Series/A118 Series on site.

1.05 FIELD CONDITIONS

A. Do not install adhesives in an unventilated environment.

B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during installation of mortar materials.

PART 2 PRODUCTS

2.01 TILE

A. Ceramic Tile (Kitchen): ANSI A137.1 and as follows:
   1. Manufacturer: American Olean, Shadow Bay
   2. Size and Shape: 12x12
   3. Edges: Square
   4. Surface Finish: Slate texture.
   5. Colors: Beach Sand SH51

B. Ceramic Mosaic tile (Bathroom): ANSI A137.1, and as follows:
   1. Manufacturer: American Olean Colorbody Mosaic
   2. Size and Shape: Manufacturer's standard 1x2 and 1x1 mosaic pattern
   3. Edges: Square.
   4. Surface Finish: Unglazed.
   5. Colors: Two color pattern, Salt and pepper (1x2) and Black (1x1)

C. Glazed Wall Tile Type Ceramic: ANSI A137.1, and as follows:
   1. Manufacturer: American Olean Profiles Glazed Ceramic Tile
   2. Size and Shape: 3x6 (rectangular).
   3. Edges: Cushioned.
   4. Surface Finish: High gloss.
   5. Color: White

2.02 TRIM AND ACCESSORIES

A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.

B. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
   1. Applications: Use in the following locations:
      a. Open Edges: Bullnose.
      b. Inside Corners: Jointed.
      c. Floor to Wall Joints: Cove base.
   2. Manufacturer: Same as for tile.

C. Thresholds: Marble, white or gray, honed finish; 2 inches (50 mm) wide by full width of wall or frame opening; 1/2 inch (12 mm) thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.
   1. Applications: Provide at the following locations:
      a. At doorways where tile terminates.
      b. At open edges of floor tile where adjacent finish is a different height.

2.03 SETTING MATERIALS

A. Mortar Bond Coat Materials for Thin-Set Installations:

2.04 GROUTS

A. Standard Grout: Any type specified in ANSI A118.6 or A118.7.

2.05 THICK-BED MATERIALS

2.06 THIN-SET ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12.
   1. Thickness: 20 mils (0.5 mm), maximum.

2. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum.

B. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Type: Fluid-applied.
   2. Products:
      a. Mapei; Mapleastic.

C. Cementitious Backer Board: ANSI A118.9; High density, cementitious, glass fiber reinforced, 1/2 inch (13 mm) thick; 2 inch (50 mm) wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and The Tile Council of North America Handbook recommendations.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

E. Form internal angles square and external angles bullnosed.

F. Install ceramic accessories rigidly in prepared openings.

G. Install thresholds where indicated.

H. Sound tile after setting. Replace hollow sounding units.

I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.

J. Allow tile to set for a minimum of 48 hours prior to grouting.

K. Grout tile joints. Use standard grout unless otherwise indicated.

L. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.02 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over wood substrates, install in accordance with The Tile Council of North America Handbook Method F142, with standard grout, unless otherwise indicated.
   1. Where epoxy bond coat and grout are indicated, install in accordance with The Tile Council of North America Handbook Method F143.

B. Over wood substrate with backer board underlayment, install in accordance with The Tile Council of North America Handbook Method F144, for cementitious backer boards, with standard grout.

3.03 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Over wood substrates, install in accordance with The Tile Council of North America Handbook method F141, with standard grout, unless otherwise indicated.

B. Mortar Bed Thickness: 5/8 inch (15 mm), unless otherwise indicated.

3.04 INSTALLATION - SHOWERS AND BATHTUB WALLS

A. At tiled shower receptors install in accordance with The Tile Council of North America Handbook Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.

B. At bathtub walls install in accordance with The Tile Council of North America Handbook Method B412, over cementitious backer units with waterproofing membrane.

C. Grout with standard grout as specified above.

D. Seal joints between tile work and other work with compatible sealant.

3.05 INSTALLATION - WALL TILE

A. On exterior walls install in accordance with The Tile Council of North America Handbook Method W244, thin-set over cementitious backer units, with waterproofing membrane.

B. Over cementitious backer units on studs, install in accordance with The Tile Council of North America Handbook Method W244, using membrane at toilet rooms.

SECTION 09 6219

LAMINATE FLOORING

PART 1 - GENERAL **$_____**

1.01 LOCATIONS

A. Provide vinyl plank flooring in Bedroom 1 walk in closet.

1.02 SYSTEM DESCRIPTION

A. Design Requirements: Provide concealed fastening wherever possible.
   1. Attachment considerations shall take into account site peculiarities and expansion and contraction movements so there is not possibility of loosening, weakening, buckling, or fracturing connection between wood flooring and substrate.

1.03 QUALITY ASSURANCE

A. Single Source Responsibility: Furnish laminate flooring from one manufacturer for Residential Units unless otherwise acceptable to Project Manager.

B. Composite-wood Products: Contain no urea formaldehyde.

C. Installer Qualifications: Acceptable to manufacturer with experience on at least five projects of similar nature in past five years.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect materials from damage, moisture, soiling and deterioration during transit and storage.

B. Do not deliver flooring materials until Project site conditions and operations which could damage, soil or deteriorate work are complete.

C. Store products and materials in ventilated, interior locations under constant minimum temperature and relative humidity recommended by manufacturer.

1.05 FIELD CONDITIONS

A. Environmental Requirements: Obtain and maintain temperature and moisture conditions as recommended by laminate flooring manufacturer during installation and remainder of construction period.

PART 2 - PRODUCTS

2.01 LAMINATE FLOORING – RESIDENTIAL UNITS

A. Description: Laminate flooring (Direct Pressure Laminate) consisting of four layered construction, Four layered thermal fused process includes smooth, abrasion resistant wear surface composed of cellulose paper saturated with melamine resin embedded with aluminum oxide to provide stain and scratch resistance, VTX print saturated with melamine resin to provide fade resistance, high density fiberboard core with technology to add moisture resistance, and melamine saturated balanced backing paper for added dimensional stability.

B. Basis of Design: Tarkett Solutions series. Selected from currently available collection in 4.92 inches width x 47.24 inches length having nominal total gauge of 0.47 inch.
   1. Color: Bayfield Walnut

C. Other Acceptable Manufacturers:
   1. Pergo Laminate Floors, Mediterranean Kempas.

2.02 ACCESSORIES

A. Transition Pieces: Provide coordinating transitions and moulding pieces designated for L8706 to meet installation application for finishing and transitioning to other flooring products.

B. Underlayment: 1/4" underlayment approved by Manufacturer for installation under laminate flooring at wood subfloor locations.

C. Primer and Adhesive: Manufacturer's recommended for conditions.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions and proceed with work in accordance with Section 01 40 00.
   1. Verify that substrates comply with manufacturer's requirements.
   2. Ensure concrete has cured 28 days minimum.
   3. Verify concrete curing compounds are compatible with flooring adhesive.
   4. Verify that substrate is clean, dry, free of voids and cracks.

3.02 PREPARATION

A. Concrete Substrate Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
   1. Perform anhydrous calcium chloride test, ASTM F1869. Ensure concrete is within floor manufacturer's recommended limits prior to installation.
   2. For substrates with moisture vapor permeance in excess of 3 pounds water vapor per 1000 SF per 24 hour period, use floor coating manufacturer's suggested remedy. Do not proceed with flooring application until condition is corrected.

B. Preparation:
   1. Remove ridges, bumps, trowel marks and protrusions from substrate.
   2. Clean substrate to remove paint, dirt, oil, grease, sealers, release agents, hardening compounds, curing compounds, residual adhesives, and harmful substances which could impair performance of adhesive materials used with flooring products.
   3. Fill depressions, low spots, cracks, joints, holes, indentations, and other defects with leveling and patching compounds. Trowel to smooth, flat surface producing substrate to within tolerance of 1/4 inch in 10 feet.
   4. Install underlayment as required by Manufacturer.
   5. Vacuum clean substrate.
   6. Prime substrate in accordance with manufacturer's requirements.

3.03 LAMINATE FLOORING INSTALLATION

A. Install flooring and adhesive in accordance with manufacturer's recommendations.
   1. Install laminate flooring plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction.
   2. Roll flooring immediately after installation with minimum 100 pounds roller.
   3. Install flooring wall to wall before installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings.
   4. Scribe, cut, and fit to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets leaving required expansion of 1/4 inch to 1/2 inch.
   5. Install flooring with adhesives, tools, and procedures in accordance with manufacturer's recommendations. Observe recommended adhesive trowel notching, open times, and working times.

B. Transition Pieces: Install coordinated transitions and molding pieces in accordance with manufacturer's recommendations.

3.04 CLEANING AND PROTECTION

A. Cleaning: Clean as recommended by manufacturer. Do not use materials or methods which may damage finish and surrounding construction.
   1. Remove excess adhesive from floor surface as work progresses.

SECTION 09 9000

PAINTING AND COATING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Lead-based paint hazards existing in the scope of work for this section. Review the Lead Report, attached in this Manual for locations of lead hazards, and see Section 02 8313 Lead Hazard Control Activies for requirements for lead hazard controls.

B. Prepare and paint all metal siding on house.

C. Prime and paint all wood trim and beadboard ceiling in front porch.

D. Paint all fibercement siding and trim on garage.

E. Paint existing and new metal handrails at exterior front steps.

F. New trim, doors and casings in rooms with stained trim are to be stained to match existing.

G. Paint all plaster and gypsum board walls and ceilings.

H. Paint Rear Entry and basement stair treads and risers.

I. Paint interior and exterior of metal exterior doors on house and garage.

J. Strip and refinish (stain) door frame at Bedroom 1.

K. Paint previously painted basement columns.

L. Paint attic access panels and casing around panels.

1.02 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Surfaces to be finished are indicated in this section and on the Drawings.

D. Joint sealants.

1.03 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Master Painters and Decorators Association; 2004.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Paints and Coatings: Sherwin Williams Low VOC or an any manufacturer listed in MPI Approved Products List (at www.paintinfo.com) approved by Project Manger.
   1. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
   2. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

B. Stains: Minwax Low VOC or any other manufacturer approved by Project Manager

2.02 MATERIALS - GENERAL

A. Volatile Organic Compound (VOC) Content:
   1. Provide coatings that comply with the most stringent requirements specified in the following:
      a. Flat: 50 grams/Liter
      b. Non-Flat: 50 grams/Liter
      c. Floor Coating: 100 grams/Liter
      d. Anti-Corrosive: 250 grams/Liter
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.03 PAINT SYSTEMS

A. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.

B. Where a specified paint system does not have a Premium Grade, provide Custom Grade system.

C. Where sheen is not specified or more than one sheen is specified, sheen will be selected later by Construction Manager from the manufacturer's full line.

D. Provide smooth texture throughout.

2.04 EXTERIOR PAINT SYSTEMS

A. Wood Traffic Surfaces:
   1. Applications include but are not limited to Decks.
   2. EXT 6.5D Deck Stain: Wood Preservative MPI #37, Deck Stain MPI #33.

B. Fibercement Siding and trim:
   1. (factory primed both faces)
   2. 1 coat primer cut ends
   3. 2 coats exterior, acrylic latex satin paint (backroll if spray applied)

C. Bare wood trim:
   1. 1 coat alkyd primer
   2. 2 coats acrylic latex semi-gloss paint

D. PVC substrates:
   1. 1 coat bonding primer for PVC substrates - water based (3 Mils DFT minimum per coat)
   2. 2 coats exterior latex flat (2 Mils DFT minimum per coat)

E. Shop-primed ferrous metal:
   1. 2 coats exterior, acrylic semi-gloss enamel (2 Mils DFT minimum per coat)

F. Un-primed ferrous metal

1. 1 coat exterior ferrous-metal primer with minimum 83% zinc dust by weight (if not shop-primed) (3 Mils DFT minimum per coat)
2. 1 coat exterior semi-gloss finish acrylic emulsion (2 Mils DFT minimum per coat)

G. Un-primed Galvanized-metal Substrates (exhaust vent covers, etc):
1. 1 coat cementitious galvanized metal primer (3 Mils DFT minimum per coat)
2. 2 coats eterior latex semigloss (2 Mils DFT minimum per coat)

H. Aluminum siding:
1. 1 coat oil based exterior primer, thinned by the addition of 1 pint per gallon of paint thinner
2. 2 coats acrylic latex satin paint, spray applied

I. Steel siding:
1. 1 coat latex bonding primer
2. 2 coats acrylic latex satin paint

2.05 INTERIOR PAINT AND STAIN SYSTEMS

A. Dressed Lumber:
1. Applications include but are not limited to doors, door frames, window frames, window casings, trim, baseboards, and moldings.
2. Previously Painted Wood trim:
   a. Spot primer at patched or bare areas with trim paint
   b. 1 coat semi-gloss finish, latex interior trim paint
3. Wood doors, frames, casing, base, base shoe and other components indicated to be stained:
   a. 1 coat wood filler
   b. 1 coat water-based stain
   c. 2 coats water-based satin polyurethane finish

B. Plaster and Gypsum Board:
1. 1 coat interior, latex wall primer
2. 2 coats interior latex flat (typical) or eggshell (where noted in finish schedule in Appendix)

2.06 JOINT SEALANTS

A. Exterior sealants:
1. Silicone, ASTM C920, Grade NS, Class 100/50, Uses M, G, O, and A; single component.
   a. Product:
   b. Color: Match adjacent finished surfaces.
   c. Use for:
      1) Joints between concrete and other materials.
      2) Joints between metal frames and other materials.
      3) Joints between doors and windows and other materials.
      4) Other exterior joints for which no other sealant is indicated.

B. Interior sealants:
1. Paintable silicone, ASTM C920, Type S, Grade NS, Class 25, Uses G, A, & O.
   a. Product: GE Silicone II manufactured by Momentive Performance Materials, Inc.
   b. Use for vertical surfaces and horizontal non-traffic surfaces:
      1) Perimeter joints of exterior openings.
      2) Horizontal joints between kitchen countertops/backsplash and gypsum board walls.
      3) Horizontal joints between window sills and jamb / head extensions.
      4) Other interior joints for which no other type of sealant is indicated.

PART 3 EXECUTION

3.01 SCOPE -- SURFACES TO BE FINISHED

A. Paint all exposed surfaces except where indicated not to be painted or to remain natural; the term "exposed" includes areas visible through permanent and built-in fixtures when they are in place.

B. Paint the surfaces described in PART 2 and as follows:
   1. If a surface, material, or item is not specifically mentioned, paint in the same manner as similar surfaces, materials, or items, regardless of whether colors are indicated or not.
   2. Paint surfaces behind movable equipment and furnishings the same as similar exposed surfaces.
   3. Paint surfaces to be concealed behind permanently installed fixtures, equipment, and furnishings, using primer only, prior to installation of the permanent item.
   4. Paint back sides of access panels and removable and hinged covers to match exposed surfaces.
   5. Paint interior surfaces of air ducts and convector and baseboard heating cabinets with flat, nonspecular black paint where visible through registers, grilles, or louvers.
   6. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

C. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted; factory-primed items are not considered factory-finished.
   2. Items indicated to receive other finish.
   3. Items indicated to remain naturally finished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

3.02 EXAMINATION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials; report incompatible primer conditions and submit recommended changes for Construction Manager's approval.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Board: 12 percent.
   2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
   3. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.03 PREPARATION

A. Prepare surfaces as specified in MPI Architectural Painting Specification Manual and as follows for the applicable surface and coating; if multiple preparation treatments are specified, use as many as necessary for best results; where the Manual references external standards for preparation (e.g. SSPC standards), prepare as specified in those standards; comply with coating manufacturer's specific preparation methods or treatments, if any.

B. Coordinate painting work with cleaning and preparation work so that dust and other contaminants do not fall on newly painted, wet surfaces.

C. Surface Appurtenances: Prior to preparing surfaces or finishing, remove electrical plates, hardware, light fixtures, light fixture trim, escutcheons, machined surfaces, fittings, and similar items already installed that are not to be painted.
   1. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before preparation and finishing.
   2. After completing painting in each space or area, reinstall items removed using workers skilled in the trades involved.

D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.

E. Marks: Seal with shellac those which may bleed through surface finishes.

F. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

H. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

I. Exterior Wood to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.

J. Existing metal siding to be painted: Thoroughly clean the existing siding according to the paint manufacturer's recommendations for substrate and type of finish coating to be applied. Test for type of metal siding and confirm primer and finish coating recommended for type of substrate.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's instructions and as specified or recommended by MPI Manual, using the preparation, products, sheens, textures, and colors as indicated.
   1. Remove, refinish, or repaint work not complying with requirements.

B. Do not apply finishes over dirt, rust, scale, grease, moisture, scuffed surfaces, or other conditions detrimental to formation of a durable coating film; do not apply finishes to surfaces that are not dry.

C. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
   1. Brush Application: Use brushes best suited for the type of material applied; use brush of appropriate size for the surface or item being painted; produce results free of visible brush marks.
   2. Roller Application: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
   3. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
   4. Where application method is listed in the MPI Manual for the paint system that application method is required; otherwise any application method recommended by manufacturer for material used and objects to be painted is acceptable.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate; provide total dry film thickness of entire system as recommended by manufacturer.
   1. Number of coats and film thickness required are the same regardless of application method.
   2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
   3. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.

E. Apply finish to completely cover surfaces with uniform appearance without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.

F. Before applying finish coats, apply a prime coat of material recommended by manufacturer, unless the surface has been prime coated by others; where evidence of suction spots or unsealed areas in first coat appear, recoat primed and sealed surfaces to ensure finish coat with no burn through or other defects due to insufficient sealing.

G. Apply first coat to surface that has been cleaned, pretreated, or otherwise prepared as soon as practical after preparation and before subsequent surface deterioration.

H. Do not apply succeeding coats until the previous coat has cured as recommended by manufacturer.

I. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat will not cause the undercoat to lift or lose adhesion.

J. If manufacturer's instructions recommend sanding to produce a smooth, even surface, sand between coats.

K. Before applying next coat vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

3.05 CLEANING AND PROTECTION

A. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from site.

C. Protect other work, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting as approved by Construction Manager.

D. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in MPI Manual.

3.06 SCHEDULE - COLORS

A. Refer to Color and Material schedule in Appendix for colors.

END OF SECTION

SECTION 10 5623

CLOSET STORAGE SHELVING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide shelving and rods in all closets.

1.02 SECTION INCLUDES

A. Wall mounted wire closet shelving.

B. Accessories.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, with installation instructions.

PART 2 PRODUCTS

2.01 SHELVING APPLICATIONS

A. Shelf Depth: 12 inches (305 mm), unless otherwise indicated.

B. Bedroom Closets:
   1. Wall-to-wall shelf with free sliding hanger rod.
   2. Not less than 4 feet (1.25 m) of shoe shelf.

C. Coat Closets:
   1. Wall-to-wall shelf with integral hanger rod.

D. Linen Closets:
   1. Wall-to-wall shelves spaced at 13 inch (330 mm) vertically, not less than 16 inch (408 mm) deep.

E. Storage Closets:
   1. Wall-to-wall storage shelves, stacked at 13 inch (330 mm) vertically, not less than 12 inch (305 mm) deep.

2.02 MATERIALS

A. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with all components and connections required to produce a rigid structure that is free of buckling and warping.
   1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi (690 MPa) resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
   2. Coating: PVC or epoxy, applied after fabrication, covering all surfaces.
   3. PVC Coating: 9 to 11 mils (0.23 to 0.028 mm) thick.
   4. Epoxy Coating: Non-toxic epoxy-polyester powder coating baked-on finish, 3 to 5 mils (0.76 to 1.27 mm) thick.
   5. Standard Mesh Shelves: Cross deck wires spaced at 1 inch (25.4 mm).
   6. Close-Mesh Shelves: Cross deck wires spaced at 1/2 inch (12.7 mm).
   7. Shelf and Rod Units: Integral hanging rod at front edge of shelf.
   8. Free-Sliding Hanging Rod: Integral hanging rod that permits uninterrupted sliding of hangers the full width of the shelf.
   9. Shoe Shelves: Same wire spacing as standard mesh shelves; angled wall brackets; upturned front lip.

B. Mounting Hardware: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.

C. Fasteners: As recommended by manufacturer for mounting substrates.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions, with shelf surfaces level.

B. Cap exposed ends of cut wires.

C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces as recommended by manufacturer.

D. Mounting Heights:
   1. Single Hanging Rod Units: Install shelf at 68 inches (1727 mm) above floor.
   2. Double Hanging Rod Units: Install shelves at 42 inches (1067 mm) and 84 inches (2134 mm) above floor.
   3. Shoe Shelves: Front edge at 4 inches (200 mm) above floor.

END OF SECTION

SECTION 10 7446

WINDOW WELLS

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide galvanized window wells at all basement windows. Seal window wells to foundation wall, excavate and provide 6" free draining pea gravel minimum 4" below basement window sills

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Product: St. Paul Corrugating Lux-Right AreaWalls, Economy Grade, or like product approved by Construction Manager or Project Manager.

B. Manufactured from 18 gauge, pre-galvanized, regular spangle steel sheets.

C. Limitations: Care should be used in selecting the style and grade of larger and deeper window wells, which should be specified in heavier gauge and properly supported during backfill and while other construction activity is taking place.

2.02 ACCESSORIES

A. Fasteners: Use masonry nails, self-drilling anchors or other approved fasteners..

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Window wells should be extended beyond the rough opening for the window by at least 3". Some building codes will require additional clearance.

C. Top of the window wells should be 2" above the established grade line and down at least 12" below the windowsill.

D. Install proper gravel for drainage.

END OF SECTION

SECTION 11 3100

HRA RESIDENTIAL APPLIANCES

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide kitchen appliances, including refrigerator, dishwasher, gas range, and vented range hood.

B. Provide washer and dryer.

1.02 REFERENCE STANDARDS

A. UL (EAUED) - Electrical Appliance and Utilization Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.03 SUMMARY

A. All appliances must be purchased new and Energy Star certified or high efficiency models when Energy Star certification is not possible.

B. All appliances must meet the Sustainable Design Requirements covered in Section 018113

1.04 SUBMITTALS

A. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

1.05 QUALITY ASSURANCE

A. Electric Appliances: Listed and labeled by UL and complying with NEMA standards.

B. Gas Appliances: Bearing design certification seal of AGA.

PART 2 PRODUCTS

2.01 APPLIANCES

A. All Equipment Eligible for Energy Star Rating: Energy Star Rated.
   1. Refrigerator: Frigidaire FFHT2126LS/K Energy Star Rated 21 cu ft top mounted refrigerator, stainless steel, with icemaker.
   2. Range: Frigidaire FFGF3053LS 30" Free-standing Gas Range, Self Clean, Clock
   3. Range hood: Broan Model QSE130WW, 1.5-5 Sone, adjustable speed, up to 220 cfm capacity, fluorescent lamp, Energy Star Qualified.
   4. Dishwasher: Frigidaire FGHD2465NF Energy Star 24" Built-in Dishwasher, including dishwasher cord, stainless steel.
   5. Washer: Frigidaire FAFW3801LW Energy Star Residential Front Load Washer
   6. Dryer: Frigidaire FAQG7001LW Residential Gas Dryer

PART 3 EXECUTION

3.01 INSTALLATION

A. All appliances shall be uncrated, cleaned and readied for use.

B. Installation shall include all cord attachments, wiring, plumbing and gas hook ups necessary for appliance operation.

C. At washer, use braided steel water supply lines and a smooth rubber drain line connected to a 2 inch drain with trap.

D. Install in accordance with manufacturer's instructions.

E. Anchor built-in equipment in place.

END OF SECTION

SECTION 12 1110

HRA MAIL BOX AND HOUSE NUMBERS

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide house numbers at front porch and garage. Locate house number at front of house on trim above front porch door and at garage adjacent to overhead door facing alley.

B. Provide wall mounted mailbox in front porch adjacent to front door.

PART 2 PRODUCTS

2.01 PRODUCTS

A. House Numbers: Schlage 4" high aged bronze classic house numbers: two sets of address numbers. Style and color to be approved by Owner or Construction Manager prior to installation.

B. Mailbox: Post Master brand Woodlands Extra Large Wall Mount Mailbox, constructed of heavy-duty galvanized steel with a white textured finish. Model number L4009WW0 17" x 10" x 4.75"

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

SECTION 12 1111
BATHROOM FURNISHINGS

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide all bathroom accessories, including: 2 towel bars, 1 towel ring, toilet paper holder, soap dish in shower, shower curtain rod, medicine cabinet. Accessories to be ceramic type when located in tub area.

PART 2 PRODUCTS

2.01 TOWEL SETS

A. Provide a metal bath set comprised of a hand towel ring, 24" towel bar and toilet paper holder

B. Manufacturer: Moen Sage Series Toilet Accessories
   1. Towel Bar (other than in tub area): Model # DN6818xx
   2. Towel ring: Model # DN6886xx bronze finish
   3. Toilet Paper Holder: Model # DN6808xx

C. Bronze finish to match faucet

2.02 MEDICINE CABINET

A. Provide a medicine cabinet with hinged plate glass mirror and two shelves over the sink.

B. Manufacturer: Pace, Meadowood Maple. Model # SMC-2530

C. Bronze finish to match faucet

2.03 SHOWER CURTAIN ROD

A. Provide a show curtain rod using wall anchors.

B. Manufacturer: Moen, Adjustable Shower Rod. Model # DN2160xx

C. Bronze finish to match faucet

2.04 CERAMIC TUB ACCESSORIES

A. Soap dish: white ceramic soap dish.

B. Towel bar: 24" towel bar with ceramic brackets for installation in tub area.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

END OF SECTION

SECTION 12 3530
RESIDENTIAL CASEWORK

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide plastic laminate countertop in kitchen.

B. Provide kitchen cabinets in new configuration shown on the drawings.

C. Provide wood bathroom vanity cabinet.

1.02 REFERENCE STANDARDS

A. ANSI/KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; Kitchen Cabinet Manufacturers Association; 2000 (R2006).

B. KCMA (DIR) - Directory of Certified Cabinet Manufacturers; Kitchen Cabinet Manufacturers Association; current edition, online.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate casework locations, large scale plans, elevations, clearances required, rough-in and anchor placement dimensions and tolerances.

1.04 QUALITY ASSURANCE

A. Products: Complying with KCMA A161.1 and KCMA Certified.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Kitchen cabinet hardware: Hickory Hardware Model P310z-OBH on doors, Hickory Hardware Model P3104-OBH on drawers

B. Kitchen: Mid-Continent Lewis or Schrock Huxley, full overlay with flat drawer
   1. Finish: cider/ wheatfield

C. Bathroom vanity: Pace Meadowood Maple MDW-3621
   1. Finish: maple

2.02 COMPONENTS

A. Bathroom Vanity Cabinets: Single 36 inch Vanity Cabinet shall match Kitchen Cabinet finish.

B. Cabinet Construction: Plywood sides and bases.

C. Kitchen Countertop: Post formed plastic laminate over particle board, coved to back splash.
   1. Side Splash: Plastic laminate over particle board, square internal intersections to back splash and top surface, contoured to suit counter top profile.
   2. Manufacturer: WilsonArt, color: Desert Springs 4904

D. Door and Drawer Fronts: Solid wood.

E. Drawer Box Construction: Plywood with dovetail joinery

2.03 HARDWARE

A. Hardware: Manufacturer's standard.

B. Kitchen cabinet replacement hardware:

2.04 FABRICATION

A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

B. Fabricate corners and joints without gaps or inaccessible spaces or areas where dirt or moisture could accumulate.

2.05 FINISHES

A. Exposed to View Surfaces: Stain, seal, and varnish as listed in Color & Material selections.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install casework, components and accessories in accordance with manufacturer's instructions.

B. Set casework items plumb and square, securely anchored to building structure.

END OF SECTION

SECTION 22 3000
PLUMBING EQUIPMENT

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Replace water heater.

B. Replace water piping and gas piping to water heater to comply with code. Provide code-compliant gas shut off and venting.

C. Provide flue through basement rim joist for water heater venting.

D. Coordinate water meter installation. Replace water piping to water meter location and run 1 inch water line from meter to first major take off.

1.02 SUBMITTALS

A. Product Data:
   1. Provide Owner's Manuals for all equipment.

1.03 SPECIAL COORDINATION

A. Upgrade of Water Meter. Contact: Northern Water Works (888) 497-4171
   1. There is no cost associated with the purchase or installation of the water meter. The only cost associated with this bid is for the coordination with Northern Water Works to install the meter.

PART 2 PRODUCTS

2.01 RESIDENTIAL POWER VENTED WATER HEATER

A. GENERAL REQUIREMNTS
   1. The inner tank material shall be 304L corrugated stainless steel or higher corrosion resistance stainless steel and have a maximum working pressure of 150 psi. The cold water connection into this tank shall extend to near the bottom of the tank. The hot water connection shall be at the top of the tank. Thanks shall be designed to be self-descaling.
   2. The outer tank shall be surrounded with a minimum of 2 inches of CFC/HCFC-free rigid polyurethane foam insulation with an equivalent "R" value of R-16.

B. MANUFACTURER: high efficiency power-vented A.O. Smith or like product approved by Project Manager
   1. Hot water tank shall have ETL certification and EF of .67.

2.02 ACCESSORIES

A. 110V outlet on GFCI

PART 3 EXECUTION

3.01 INSTALLATION

A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.

B. Coordinate with plumbing piping and related fuel piping work to achieve operating system.

C. Hot water tank shall be installed by a heating contractor whose principal occupation is the sale and installation of plumbing, heating, and or air conditioning equipment and shall be installed in compliance with all applicable codes. Include pressure and temperature release valve, discharge tube to within 6" of floor and PVC flue to power vent to exterior.

D. Provide water & gas supply & flue piping.

E. Coordinate water meter installation with Northern Water Works. Water meter shall be installed a minimum of 12" above the floor with code compliant service valves.

END OF SECTION

SECTION 22 4000

PLUMBING FIXTURES AND PIPING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide 1 frost-free hose bibb with backflow prevention.

B. Provide kitchen sink and faucet.

C. Provide one-piece cultured marble top with bowl for vanity. Provide bathroom faucet in cultured marble top.

D. Provide tub, tub spout, shower head, stopper, piping and anti-scald valve assembly.

E. Provide toilet in bathroom.

F. Provide washer and dryer hookups on south wall of basement near SW corner. Provide washer box, water supply, gas supply for dryer.

G. Replace all water and waste pipes from all plumbing fixtures to mains in basement and provide code-compliant venting and hangers.

H. Provide soil stack cleanout and front sewer line clean out.

I. Provide code-compliant gas piping and shut-off to dryer.

J. Provide laundry tub, faucet, piping and vacuum breaker for code-compliant installation.

K. Remove all abandoned gas lines.

L. Clean out floor drains, sewer main to street at end of construction

M. Provide new cover for existing basement floor drain.

1.02 REFERENCE STANDARDS

A. ASME A112.19.4M - Porcelain Enameled Formed Steel Plumbing Fixtures; The American Society of Mechanical Engineers; 1994 (R2004).

B. ASME A112.19.14 - Six Liter Water Closets Equipped with Dual Flushing Device; 2006.

1.03 PRICE AND PAYMENT PROCEDURES

PART 2 PRODUCTS

2.01 SINKS

A. Kitchen Sink: Remove existing sink to code legal dump.
   1. Sink: Install a 22 gauge 33"x22"x8" double bowl, stainless steel, self rimming kitchen sink. Manufacturer: Moen, Model number 2212, or like product to be approved by Project Manger
   2. Faucet: Manufactured by Moen, Model 7825 or like product to be approved by Project Manager
      a. Flow Rate: 1.3 GPM maximum

B. Laundry Tub:
   1. Sink: Service sink, Leg supported: Mustee Utilatub, single compartment. Size approximately 24"w x 24"d, floor mounted. Complete with #A-2 chrome overflow pipe and "P" trap.
   2. Faucet: 1.3 GPM, Two handle chrome deck facuet, 4" o.c.

C. Bathroom Vanity:
   1. Sink: 25 inch solid recessed oval bowl vanity top Manufactured by Imperial Marble. Model number RCxx22SPW
   2. Faucet: Single lever faucet with 1.3 GPM maximum flow rate
      a. High Arch Faucet: Manufactured by Moen, Model number (Bronze) CA84003BRB Moen CA84002BRB

2.02 DUAL FLUSH TOILET

A. Dual Flush Water Closets: ASME A112.19.14; high efficiency and low consumption (1.2 GPF), vitreous china, dual flush, tank type.
   1. Bowl: Elongated.
   2. Flush Actuator: Manufacturer's standard.
   3. Rough in: 12 inch (305 mm).
   4. Seat: Manufacturer’s standard or recommended elongated closed front seat with lid.
   5. Color: White.

2.03 BATHTUBS

A. Bathtub: ASME A112.19.4M porcelain on steel bathtub with slip resistant surface, contoured front apron, 60 inches (1473 mm) long (field verify), white color.

B. Bath and Shower Trim: ASME A112.18.1; concealed shower and over rim supply with diverter spout, pressure balanced mixing valve, bent shower arm with adjustable spray ball joint showerhead with maximum 1.5 gallons per minute (5.6 liters per minute) flow and escutcheon, lever operated pop-up waste and overflow.
   1. Moen 82008BRB

2.04 WASHER BOX

A. Wall box pre-fitted with hot and cold water shut off valves, designed to be surface mounted on basement wall.

2.05 HOSE BIBB

A. Frost-proof type, keyless operation.

2.06 SEALANTS

A. Silicone sealant between fixtures and all dissimilar materials. White silicone; ASTM C920, Grade NS, Class 100/50, Uses I, M, NT and A; single component, mildew resistant.

2.07 PIPING

A. Waste and Vent

B. Supply

C. Valves and Stops

PART 3 EXECUTION

3.01 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Install new PVC or ABS waste and vent piping from basement to kitchen sink, all bathroom fixtures, and laundry sink.

C. Install flexible PEX piping with a minimum number of coupling to all fixtures. Install mechanical connectors and shut off valves if approppriate for each fixture.
   1. Sixe pipe to 1990 CABO minimums per table 2406.5
   2. Include clothes washer hook up.

D. Furnish and install all water piping and shut-off valves necessary to complete work.

E. Retrofit the water meter to comply with existing code.

F. Install components level and plumb.

G. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 9005, color to match fixture.

H. Seal around plumbing penetrations in all exterior suraces, surfaces that border on unconditioned spces, between floors, and throught the exterior of the building.

I. Clean out basement floor drain at end of construction period and verify operation and function.

1. Install new drain cover.

END OF SECTION

SECTION 23 0000

RESIDENTIAL VENTILATION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide galvanized rigid ductwork for connection of new range hood at Kitchen. Route the ductwork horizontally through soffit to exterior wall and provide dampered wall termination cap. Insulate entire duct and seal all penetrations.

B. Remove and replace dryer vent duct with code compliant installation. Provide wall cap with pvc type. Include backflow damper and bird screen.

C. Provide bath fan and galvanized rigid ductwork at bathroom. Route through attic to roof and provide dampered roof vent cap termination. Insulate entire duct and seal all penetrations at attic and roof.

PART 2 PRODUCTS

2.01 BATHROOM VENT FAN/LIGHT FIXTURE:

A. All vent fans shall be Energy Star rated ceiling mounted fan/light fixtures including 2-stage fan with a lower level continuous function to comply with ASHRAE standard 62.2.

B. Product: Panasonic FV-08VKSL3 WhisperGreen-Lite™ 80 CFM Ceiling Mounted Ventilation Fan with DC Motor, Variable Speed Controls and Light or like product to be approved by the Project Manger

C. Switch: Light and fan shall use same switch with a time delay for fan such as the EFI/Light Time Delay Switch Part # 5100.505 or equipped with a humidistat sensor. Use switch and relay compatible with fan/light fixture.

D. Ducting: Install 4" metal duct and vent to the exterior ideally through a gable end using a 4" hooded vent with damper.
   1. All duct seams shall be sealed with duct mastic. Insulate duct work with vinyl or foil faced R-6 minimum duct insulation.
   2. Repair any damage to the ceiling installation or air seal fan/light assembly to the ceiling with low VOC caulk.

2.02 DUCT ASSEMBLIES

A. General Exhaust: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.

B. Kitchen Cooking Hood Exhaust: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.

2.03 DUCTWORK FABRICATION

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.

B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

2.04 KITCHEN HOOD EXHAUST DUCTWORK

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, SMACNA Kitchen Ventilation Systems and Food Service Equipment Fabrication & Installation Guidelines and NFPA 96.

END OF SECTION

SECTION 23 5400

FORCED AIR FURNACE AND DUCTS

PART 1 GENERAL

1.01 LOCATIONS

A. Provide flue through basement rim joist for furnace venting.

B. Provide all new supply and return ductwork in basement serving main floor and basement and ductwork up to second floor to serve second floor rooms.

C. Provide furnace. Provide new venting and combustion air intake.

D. Provide programmable thermostat for furnace.

E. Provide supply and return grilles at all rooms.

F. Clean out all ductwork prior to occupancy.

1.02 SUBMITTALS

A. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

B. Product data indicating Heating, Cooling equipment and Ducts are in compliance with Air Conditioning Contractors of America (ACCA) Manuals, Parts J, S, and D. Alternate Compliance paths are as Follows:
   1. ASHRAE Handbooks

PART 2 PRODUCTS

2.01 GAS FIRED FURNACES

A. Annual Fuel Utilization Efficiency (AFUE): 0.95 ("condensing").

B. Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating element, controls, air filter, and accessories; wired for single power connection with control transformer.
   1. Safety certified by CSA in accordance with ANSI Z 21.47.
   2. Venting System: Direct.
   3. Combustion: Sealed
   4. Air Flow Configuration: Upflow.
   5. Heating: Natural gas fired.
   6. Warranty; Minimum 20 years on heat exchanger, 5 years on parts.
   7. Certification: Energy Star-rated

C. Performance:
   1. HVAC contractor will be responsible to determine heat load using Manual J.

D. Cabinet: Steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.

E. Primary Heat Exchanger:
   1. Material: Hot-rolled steel
   2. Shape: Tubular type.

F. Secondary Heat Exchanger:
   1. Material: Aluminized steel.
   2. Coating: Polypropylene.

G. Gas Burner:
   1. Multi-stage type with adjustable combustion air supply,
   2. Gas valve, two stage provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
   3. Electronic pilot ignition, with electric spark igniter.

H. Supply Fan: Centrifugal type rubber mounted with direct drive with adjustable variable pitch motor pulley.

I. Motor: ECM motor with 2" rise above floor.1750 rpm two-speed, permanently lubricated, hinge mounted.

J. Air Filters: 1 inch (25 mm) thick glass fiber, disposable type arranged for easy replacement.

K. Ducts: Install all new supply and return air ducting to code.

L. Accessories: Include autosetback thermostatcontrols, vent pipe and new shut-off valve.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with NFPA 90A.

B. Install gas fired furnaces in accordance with NFPA 54.

C. Provide vent connections in accordance with NFPA 211.

D. Connect to existing and new ductwork and gas line. Vent with PVC piping per manufacturer's specifications. Rework air return if necessary to ensure easy access, good fit and easy replacement of air filter. An exterior return air fitler box shall be installed on one side, both sides, or bottom of new furnace. Seal all exposed duct joints with duct mastic. Remove all existing cloth duct tape prior to installing mastic.

E. The Contractor shall have all HVAC ducting cleaned by a professional duct cleaning company after all interior repairs are completed inside the house.

END OF SECTION

SECTION 23 6213
FORCED AIR A/C

PART 1 GENERAL

1.01 LOCATIONS

A. ALTERNATE #1: Provide air-conditioner coil for furnace and condenser on pad, and connect to furnace for complete system.

1.02 SUBMITTALS

A. Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Include equipment served by condensing units in submittal, or submit at same time, to ensure capacities are complementary.

B. Design Data: Indicate pipe and equipment sizing.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Units: Self-contained, packaged, factory assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressors, condensing coil and fans, integral sub-cooling coil, controls, liquid receiver, wind deflector, and screens.

B. Performace Ratings: Energy Efficiency Ratio of 13

2.02 CASING

A. House components in welded steel frame with galvanized steel panels with weather resistant, baked enamel finish.

2.03 CONDENSER COILS

A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Provide sub-cooling circuits. Air test under water to 425 psig (2900 kPa), and vacuum dehydrate. Seal with holding charge of nitrogen.

2.04 FANS AND MOTORS

A. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with permanent lubricated ball bearings and built in current and thermal overload protection.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide piping for refrigeration system as required.

B. Provide connection to refrigeration piping system and evaporators.

C. Ues OEM performance information and industry-approved procedures, confirm that the selected equipment satisfies/meets the load requirements at the system design conditions.

END OF SECTION

SECTION 26 0001

POWER, WIRING AND DEVICES

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide weatherproof GFI outlet at front and back doors.

B. Provide hardwired doorbell at front door and chime in kitchen.

C. Provide code-compliant wiring for dryer.

D. Remove surface mounted and disconnected wiring and cables. Provide concealed conduit and wiring to all devices

E. Replace switches for all light fixtures. Provide switches for all new light fixtures.

F. Replace cover plates for all electrical devices throughout interior and exterior of building.

G. All existing and new receptacles must be grounded, tamper-resistand and be on an Arc-Fault Circuit Interrupter-protected circuit. Add a receptacle in Bedroom 2. Provide GFI outlets in kitchen and bathroom as required by code. Check all outlets for proper polarity.

H. Provide hard wired smoke detectors and carbon monoxide detectors throughout building to meet code.

I. Ground the electrical service to the water service with a copper conductor within 5 feet of the entrance point of the water service. Bond around water meter with a copper wire sized for the electrical service per Article 250 of the NEC.

J. Replace existing electrical service with a residential, 150 amp, single phase, 3 wire electric service to the basement allowing for expansion or additional circuits, dedicated circuits for all major appliances and new A/C unit. Provide a complete circuit directory at service panel indicating location and use of all circuits. Provide a separate 20 amp laundry circuit and separate 20 amp kitchen appliance circuit.

K. Provide electrical service as required for washer and dryer hookups on south wall of basement.

L. Provide junction box covers for all open junction boxes.

M. Provide electrical service to garage for interior light, exterior lights, garage door openers, and one interior and one exterior duplex outlet (GFI) at garage.

N. Provide new outlets where shown on Drawings and additional as required by code or required by appliances.

O. Provide service and wiring to furnace, water heater and sump pump.

P. Provide service and wiring for bathroom exhaust and kitchen range exhaust fans.

1.02 SUMMARY OF BULLETIN 80-1 (PROPERTY MAINTENANCE CODE)

A. All hazardous, improper and/or illegal wiring shall be removed or required to the present Electrical Code. This will include other buildings on the property such as garages, sheds, etc.

B. Minimum size for all new services for single residential occupancies shall be 100 ampere, 240 Volt.

C. No additions or extensions will be allowed on an existing ampere services.

D. The Following are minimum requirements for new service installation:

1. **Electrical outlets required:** Every habitable room 120 square feet or less in area, of a dwelling or dwelling unit of a multiple dwelling shall contain at least two separate and remote duplex outlet shall be required for each additional 80 square feet or fraction thereof. New outlets must be grounded, tamper-resistant and Arc-Fault Circuit Interrupters (AFCI) protected according to Section 210.12 of the 2008 National Electrical Code.
2. **In Kitchens:** Three separate and remote duplex outlets shall be required. At least one of the required duplex outlets shall be supplied by a separate twenty ampere circuit. Any new receptacle installed for the counter top shall be of the Ground Fault Circuit Interrupter (GFCI) type.

3. **Every public hall, water closet compartment, bathroom, laundry room and furnace room must contain at least one electric light fixture.** In addition to the light fixture, every bathroom and laundry room must have at least one duplex outlet. The required duplex outlet in each laundry room must be on a separate twenty ampere circuit. The required duplex outlet in each bathroom must be of the (GFCI) type. Any existing outlets in any bathroom must be converted to a GFCI-protected outlet or removed. The required GFCI outlet in the bathroom must be immediately adjacent to the sink. If a bathroom is added or gutted as part of the update, a 20 ampere circuit will be required per NEC 210.11(C)(3).
4. **Every common hall and inside stairway** in every residential structure or dwelling unit shall be adequately lit with an illumination of at least five lumens per square foot in the darkest portion of the normally traveled stairs and passageways.
5. **All exterior exits and entryways** are required to be illuminated a minimum of one footcandle at grade level for security.
6. **Exterior lighting** at garages is required to be adequate so as to not endanger health or safety. An average of one footcandle at the pavement is required. Exterior lighting must be in conformance with other city codes.
7. **Basement:** One lighting outlet is required for each 200 square feet of floor space. At least one of the required basement lighting outlets shall be switched form the head of the stairs.
8. **Smoke Detectors:**
    a. All single-family dwelling shall have a hard-wired (120 volt electrical, not battery) battery-backup smoke detector installed near and in the bedrooms and on each habitable level of the house as required by the Building Code.
9. **Carbon Monoxide Detectors:** Provide carbon monoxide detectors as required by the Building Code and Authority Having Jurisdiction.
10. Metallic Light Fixtures (Luminaries): If within five feet horizontally or eight feet vertically of grounded surfaces (metallic piping, concrete floor, etc.) must be grounded.
11. **Residential Closet Lights:** All closet lights must either be a florescent fixture(luminaire) or an enclosed incandescent fixture of the types required by the present Electrical Code. Fixtures must not be directly over the storage area in a closet; they must either be moved or eliminated and blanked off.
12. **Service conduits run in outside walls:** If a 100-ampere service is changed from fuses to circuit breakers, the meter is already outside, and the existing conduit is run in the outside wall, the conduit may be re-used. If the service is an upgrade (increase in amperage), conduit in the wall may not be re-used.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Conduit and Cable: Provide materials that meet code requirements.

B. New Service: Include a main disconnect, 22 circuit panel board, meter socket, weather head, service cable, and ground rod and cable. Seal exterior service penetrations.
    1. New service panel shall conform to the BOCA Existing Structures code.

C. Devices and Coverplates: Provide all White or Ivory devices per Project Managers Selection. Provide heavy duty residential grade devices.

D. Smoke/CO Detectors: Hard wired w/ battery-back up type units

E. Doorbell system: System containing a low voltage transformer, power connection, buzzer and front door button.

F. Equipment Wiring: Provide the correct power supply on separate circuit, with over current protection including all connecters for the Water Heater, Boiler, Microwave, Refrigerator, and Dishwasher.
    1. Kitchen Receptacles to be 20 amp Circuits:
        a. Install small appliance circuits along counter tops to code.

1) Evenly dividing the number of countertop appliance receptacles between 2 circuits.
2) GFCI receptacles when they fall within 6 feet of sink.

b. Individual circuits for permanently installed appliances; range, dishwasher, exteriorly vented Microwave with Rangehood and refrigerator to code.

G. GFCI Receptacles: Install flush mounted, ground fault circuit interrupted ivory duplex receptacle adjacent to lavatory using copper Romex.

2.02 MATERIALS

A. All materials shall be UL approved and/or National Electrical Code rated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Building Codes: The extent of electrical work indicated in the Scope of work is stated generally to indicate end result of work. The Contractor is responsible for making a thororugh inspection of the site to determine the full extent of work required to achieve the end results. All electrical work must meet current building code requirments and must pass City of Saint Paul field inspection. Any work that does not meet codes or pass inspection must be corrected to the satisfaction of the city inspector at no additional cost to the Owner.

C. Certify Electrical Distribution: Electrician shall inspect all exposed wiring, motors, fixtures and devices for malfunction, shorts and hosing code compliance. Non-functioning and dangerous equipment and wiring shall be replaced.

D. Remove and dispose of all abandoned wiring and devices. Modify existing wiring and devices as indicated

E. All new wiring, when passing through living areas, shall be concealed.

F. All new recepticals and switches

G. All new outlet covers: Ivory

H. All drilling, cutting and fastening shall be neat and true, and shall not critically damage framing members.

I. All patching shall match the surrounding surface.

END OF SECTION

SECTION 26 5101

HRA LIGHTING

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Replace all interior and exterior light fixtures and ceiling fans with new fixtures as indicated in products paragraphs. Ground lights as required by code.

B. Provide new lights and switches in new locations where located on plans. Where light fixtures not shown on plans, replace fixture in current location.

1.02 PRICE AND PAYMENT PROCEDURES

PART 2 PRODUCTS

2.01 INTERIOR LIGHTING

A. Royce Lighting
   1. Product Series: Valhalla, Heirloom Bronze Finish (except where noted)
      a. 3 Light Flush Mount (entries, bedrooms, kitchen, 2nd floor hall): Model RFM2247
      b. 1 light Vanity (bathroom, 2 fixtures): Model RW2247
      c. 3 Light Semi Flush Mount (living): Model RSF2247
      d. 5 light Chandelier (dining): RC2247B/5-46
      e. 1 Light Flush Mount (Kitchen sink/soffit, Bedroom 1 closet): Patriot Lighting GLC2301-ORBES-I

B. Other Acceptable Manufacturers: To be approved by Project Manager

2.02 EXTERIOR LIGHTING

A. Garage and side entrance: DualBrite 300 watt motion security light with shields: Heath/Zenith Shaker Cove Mission Estar SL-4135-OR

B. Exterior Flush Mount (front porch)
   1. Westinghouse lighting ceiling light 6682300

2.03 BASEMENT LIGHTING

A. Stairway: One fixture on stairway landing and one at the bottom of the stairway. Once switch at the top of the basement stairway to control these two lights.

B. Additional ceiling mounted pull chain lights in various location throughout the basement where necessarily.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. All new wiring when passing through living areas shall be concealed.

C. Wire mold and surface mount boxes for receptacles.

D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaries.

END OF SECTION

SECTION 28 1600

INTRUSION DETECTION

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide and install a security system, to include a minimum of hardwired control panel with cellular transmitter (no phone line required), 2 hardwired keypads, two (2) Door sensors, motion detector, low temperature monitoring and siren.

B. Include a monthly monitoring service at a rate not to exceed $50/month.

C. Contracts for monitoring must be month to month, not an extended period.

D. Monitoring shall begin upon completion of construction and be paid by Owner.

1.02 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Furnish products listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and indicated.

PART 2 PRODUCTS

2.01 ALARM CONTROL PANEL

A. Control Panel: Modular construction with surface wall-mounted enclosure.

B. Power supply: Adequate to serve control panel modules, remote detectors, and alarm signaling devices. Include battery-operated emergency power supply with capacity for operating system in standby mode for 24 hours.

2.02 INITIATING DEVICES

A. Magnetic Switches: As required for complete and operable system.

B. Motion Detectors: As required for complete and operable system.

2.03 SIGNAL DEVICES

A. Alarm Bells: NFPA 72, electric single stroke, 8 inch (200 mm) bell with operating mechanism behind dome. Sound Rating: 81 dB at 10 feet (3 M).

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use 18 AWG minimum size conductors for detection and signal circuit conductors. Install wiring in cable.

C. As soon as System is installed contact HRA Project Manager to inform him/her to apply for a security permit.

3.02 CLOSEOUT ACTIVITIES

A. Demonstrate normal and abnormal modes of operation, and required responses to each.

END OF SECTION

SECTION 31 2200

GRADING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Lead-based paint hazards exist in the scope of work for this section. Review the Lead Report, attached in this Manual for locations of lead hazards, and see Section 02 8313 Lead Hazard Control Activities for requirements for lead hazard controls.

B. Excavate to 24” below grade 4' along west and south wall starting at southwest corner of foundation to allow for foundation repairs. After foundation repairs are complete backfill with suitable fill, compact to 95% proctor density and grade to drain away from house ¼” per foot minimum.

C. Provide imported topsoil, fill and grading as required by landscape plan and to provide positive drainage away from house and garage.

1.02 SECTION INCLUDES

A. Finish grading .

B. Fill

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Materials

1. General
    a. Provide soil materials free from organic matter and deleterious substances, containing no rocks ro lumps over 2" in the greatest dimension and with no more than 15% of the rocks or lumps larger than 1" in their greatest dimensions, predominately granular, non-expansive soil. Fill material is subject to the approval of the construction manager and is that material removed from excavations or imported from off-site borrow areas.
    b. Provide 6" minimum thickness of Class 5 base course under slabs-on-grade.
2. Under All Paved Areas
    a. Under Class 5 base course: Non-frost suscepible sand having less than 5% of the particles by weight passing the #200 sieve and less than 40% by weight passing the #40 sieve.
3. Exterior Backfill against Foundation Walls: Shall consist of engineered fill, predominantly granular, non-expansive, pit run sand with less than 12 percent passing the No. 200 sieve opening. This shall extend to within 2 feet of final grade.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Evaluate soil condition at all excavated areas and areas to be filled. Notify Construction Manager of presense of unstable fill, buried debris, clinkers, or other inappropriate materials before filling area.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

3.03 ROUGH GRADING

A. When excavating through roots, perform work by hand and cut roots with sharp axe.

3.04 FINISH GRADING

A. Before Finish Grading:

1. Verify building and trench backfilling have been inspected.
2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch (13 mm) in size. Remove soil contaminated with petroleum products.

C. Build up ground slope at foundation wall using clean fill.

D. New fill shall have an apporoximate slope of 1/12 and extend away from the foundation wall approximately five feet.

E. Adjust window wells for new slope.

F. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches (75 mm).

G. Remove roots, weeds, rocks, and foreign material while spreading.

H. Vigorously tamp or roll new fill to achieve settled depth.

I. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

END OF SECTION

SECTION 32 1313
CONCRETE PAVING

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Replace steps from public sidewalk up to sidewalk in front of house.Replace sections of sidewalks as indicated on the Drawings.

B. Provide concrete apron with compacted class 5 base between alley and existing garage.

1.02 REFERENCE STANDARDS

A. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.

B. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Concrete Sidewalks and Median Barrier: 3,000 psi (20.7 MPa) 28 day concrete, 4 inches (100 mm) thick, buff color Portland cement, exposed aggregate finish.

2.02 FORM MATERIALS

A. Wood form material, profiled to suit conditions.

PART 3 EXECUTION

3.01 SUBBASE

3.02 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

3.03 COLD AND HOT WEATHER CONCRETING

A. Follow recommendations of ACI 305R when concreting during hot weather.

B. Follow recommendations of ACI 306R when concreting during cold weather.

C. Do not place concrete when base surface temperature is less than 40 degrees F (4 degrees C), or surface is wet or frozen.

3.04 JOINTS

3.05 FINISHING

A. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch (6 mm) radius.

B. Curbs and Gutters: Light broom, texture parallel to pavement direction.

END OF SECTION

SECTION 32 3129

WOOD FENCES AND GATES

PART 1 GENERAL **$_____**

1.01 LOCATION

A. Provide a 5' high wood privacy fence along alley and at side yards as indicated on the Drawings and 3' wide gates where indicated on the Drawings.

1.02 SECTION INCLUDES

A. Wood fence, gates and hardware.

PART 2 PRODUCTS

2.01 MATERIALS

A. Lumber Standards: Comply with PS 'American Softwood Lumber Standard" for lumber and with applicable grading rules of inspection agencies.

B. Wood Moisture Content: Comply with requirements of referenced quality standard and manufacturer's recommendations for mositure content of finish carpentry.

C. Fence Materials: Provide the Following:
   1. Species and Grade: Western Red Cedar, heartwood. No cracks, splits or warps.
   2. Posts: 4x4 (3 1/2 x 3 1/2 actual)
   3. Rails: 2x4 (1 1/2 x 1/2 actual), 3 per fence section (top, bottom and middle)
   4. Pickets: 1x4 (3/4 x 3 1/2 actual), square edges and corners.

D. Fasteners: Stainless Steel.

E. Gates:
   1. 3' wide gates consisting of 2x4 frame and diagonal bracing with 1x4 pickets. Three heavy duty hinges and heavy duty latch per gate.

F. Cast -in- place Concrete: See Section 03 3000

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Locate utilities before installation. Locate fence and gates according to site plan. Install all components true and level

C. Set 12" sonotubes at post locations to allow for concrete footings minimun 42" below grade plus 6" gravel. Install posts per site plan, maximum of 6'-0" o.c.. Set post level on top of gravel before pouring footing.

D. Slope top of footing to drain away from posts, top of footing at grade level. Allow for concrete footings to cure before installing rails and pickets.

E. Install rails 2" below finished top of pickets, 2" above bottom, and at midpoint, with outside face of rails flush with outside face of post. Install pickets on exterior side (facing away from house) of rails and post, with 1/4"gap between pickets.

F. Install pickets with consistent top height across entire fence and minimum 2" maximum 5" between bottom of pickets and grade (consistent height each section between posts).

END OF SECTION

SECTION 32 3223
SEGMENTAL RETAINING WALLS

PART 1 GENERAL

1.01 LOCATIONS

A. Provide segmental retaining wall along north side of property line along public sidewalk. See Drawings.

1.02 SECTION INCLUDES

A. Segmental retaining walls made of modular concrete units without soil reinforcement.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Segmental Concrete Units:
   1. Keystone Retaining Wall Systems, Inc: www.keystonewalls.com.
   2. Versa-Lokwww.versa-lok.com/

2.02 RETAINING WALLS

A. Contractor is responsible for design of the retaining walls.

B. Design Standard: Design retaining walls to be capable of withstanding the effects of gravity loads due to soil pressures resulting from grades indicated, determined in accordance with NCMA TR 127 Design Manual for Segmental Retaining Walls; perform all stability analyses specified in this standard.
   1. In addition, comply with applicable local, state, and federal codes and regulations.
   2. This design method considers potential failure modes categorized by external, internal, local, compound, and global stability.
   3. Provide engineering services as required for analysis for all modes of stability.
   4. Use of design software for calculations is permitted.
   5. Submit complete shop drawings showing all features of the design.

C. Shear Resistance: Design the wall not to exceed the capacity of materials and soils to resist shear:
   1. Shear Resistance Between Units: Determine in accordance with NCMA SRWU-2.

D. Soil Reinforcement:
   1. Test reinforcement to be used in accordance with ASTM D6706 using soil taken from project site.
   2. Do not use more than one type of reinforcement attached to units within the same wall; do not use products made by different manufacturers in the same wall; minimize the number of different reinforcement and filter products to avoid confusion in placement.
   3. Walls Less Than 12 Feet (3.5 M) High: Use only one type of reinforcement of one grade and strength.
   4. Length Back from Wall: Not less than dimensions shown on the drawings.
   5. Long Term Design Strength of Reinforcement: Determine in accordance with NCMA TR 127: LTDS = Tult / (RFd + RFid + RFcr), where:
      a. Tult = Ultimate (tensile) strength,
      b. RFd = Reduction Factor for chemical and biological durability; minimum 1.1 for polyethylene and polypropylene, 1.15 for coated polyester geogrids, and 1.6 for polyester geotextiles;
      c. RFid = Reduction Factor for Installation Damage;
      d. RFcr = Reduction Factor for Creep; consistent with test procedure used for determining the ultimate strength.

E. Drainage: Design to prevent water accumulation in retained soil; use drainage fill and drainage pipe as required; provide outlets at 8 foot (____ m) intervals along length of wall, minimum.

2.03 MATERIALS

A. Retaining Wall Units: Machine-formed concrete blocks of shapes and sizes suitable for the retaining wall configuration required and complying with ASTM C1372 and the following:
   1. Face Color: AS SCHEDULED .
   2. Texture: Split face, on all exposed surfaces.

B. Cap Units: Portland cement concrete machine-formed solid blocks, matching segmental concrete units, complying with ASTM C1372, with abutting edges saw cut or formed to provide tight fitting, flush end-to-end joints.
   1. Depth: To fully cover wall units.
   2. Masonry Adhesive: To secure cap units as top course of wall.
      a. Expected Life Span: 30 years.
      b. Provide adhesive conforming to ASTM C920, Type S, Grade NS, Class 25, and as approved by unit manufacturer.

C. Shear Connectors: Connection method to withstand design stresses and prevent movement of segmental units, and to hold soil reinforcement in proper design position during grid pre-tensioning and backfilling.
   1. Maintain strength over design temperature range of minus 10 degrees F (23 degrees C) to plus 100 degrees F (38 degrees C).

D. Soil Reinforcement: Polymeric geosynthetic specifically fabricated for use as soil reinforcement, dimensionally stable and able to retain geometry under manufacture, transport, and installation.
   1. Polymeric Material: 100 percent virgin resin with maximum of 5 percent in-plant regrind material; polypropylene, polyethylene, or polyester.
      a. Polyethylene and Polypropylene: Stabilized with long term antioxidants.
      b. Polyester: Minimum molecular weight of 25,000 and carboxyl end group number less than 30.
   2. Permittivity: 0.5 per second, minimum, when tested in accordance with ASTM D4491.
   3. UV Resistance: 70 percent after 500 hours, when tested in accordance with ASTM D4355.
   4. Durability: Comply with minimum requirements of AASHTO M 288 Class 1; minimum mass of 8 oz/sq yard (270 g/sq m).

E. Drainage Filter: Geosynthetic textile.
   1. Permittivity: 0.5 per second, minimum, when tested in accordance with ASTM D4491.
   2. Durability: Comply with minimum requirements of AASHTO M 288 Class 1; minimum mass of 8 oz/sq yard (270 g/sq m).

F. Aggregate for Leveling Pad: Compacted sand, gravel, or crushed rock complying with one of the following:
   1. Meeting requirements of ASTM D1241, Gradation C.
   2. Do not use pea gravel.

G. Drainage Fill: Clean, freely draining aggregate placed within, between, or immediately behind segmental units; do not use pea gravel; use one of the following:
   1. Aggregate as approved by Construction Manager.
   2. Aggregate meeting requirements of ASTM D448, Size No. 57.
   3. Crushed stone or coarse gravel, 3/8 to (3/4 mm); no more than 5 percent passing No. 200 sieve.
   4. Crushed stone or coarse gravel, meeting requirements of ASTM D422.

PART 3 EXECUTION

3.01 PREPARATION

A. Excavation:
   1. Excavate to lines and grades shown on drawings.
   2. Do not disturb embankment or foundation beyond lines. Minimize over-excavation; fill over-excavated areas with compacted reinforced backfill or leveling pad material at Contractor's expense.

3. After excavation, and prior to placement of leveling materials, Geotechnical Engineer will examine bearing soil surface to verify strength meets or exceeds design requirements and assumptions.
4. Replace unsuitable bearing soil as directed by Geotechnical Engineer.

B. Leveling Pad:
1. Width: 6 inches (152 mm) minimum extension beyond front and back faces of units.
2. Location: Top of pad at 1 inch (25 mm) below grade for each 8 inches (200 mm) that wall extends above grade.
3. Compact aggregate to lines and grades on drawings, in lifts 6 inches (152 mm) thick, maximum.
4. Use only hand-operated compaction equipment within 36 inches (1 m) of back of wall.

C. Verify level grade before proceeding.

D. Install drainage collection pipe with a continuous fall in the direction of flow. Cap open ends as necessary to prevent soil and debris from entering.

3.02 INSTALLATION

A. Install in accordance with manufacturer instructions, and applicable codes and regulations.

B. Segmental Concrete Units:
1. Place first course of units on leveling pad; check alignment and level. Check for full contact with base and for stability.
2. Place units side by side for full length of wall, aligning back face of straight walls using string line or offset from base line and back face of curved walls using flexible pipe or other method recommended by manufacturer
3. Do not leave gaps between units.
4. Lay out corners and curves in accordance with manufacturer's instructions. Do not leave gaps to produce wall batter or curvature.
5. Cut blocks with saw; do not split units.
6. Sweep excess material from tops of units before laying succeeding courses.
7. Place succeeding courses. Check for proper alignment and batter.
8. Where top of wall changes elevation, step units to match grade or turn top course into embankment.
9. Where bottom of wall changes elevation, step base leveling pad and extend lowest course a minimum of two units into slope.

C. Soil Reinforcement: Install each layer on fully compacted fill.
1. Orient soil reinforcement material with highest strength axis perpendicular to wall alignment.
2. Attach to top of wall units and extend horizontally, full length, over compacted backfill.
3. Install in one piece lengths with 100 percent coverage in each layer at each level. Do not splice or leave gaps between panels or ends of pieces.

D. Drainage Fill: Place drainage fill in, between, and behind units.
1. Compact to lines and grades on drawings, in lifts 6 inches (152 mm) thick, maximum; decrease lift thickness where necessary to achieve required density.
2. Extend drainage fill 6 inches (150 mm) beyond back face of units.

E. Backfill: Place, spread, and compact backfill from behind drainage fill to undisturbed soil.
1. Use only lightweight hand-operated compaction equipment within 3 ft (900 mm) from back wall face, or one half of wall height, whichever is greater.
2. Place backfill in lifts of maximum 6 inches (150 mm) to 8 inches (200 mm) loose thickness where hand compaction is used and 8 inches (200 mm) to 10 inches (250 mm)
3. Compact backfill to 95 percent of maximum density, standard Proctor, as determined in accordance with ASTM D698, or as recommended by Geotechnical Engineer.
4. Moisture content of backfill prior to and during compaction to be within plus 1 or minus 3 percentage points dry of optimum and uniform throughout each layer.
5. Do not operate tracked construction equipment directly upon soil reinforcement.

6. At end of each day, slope top of backfill away from wall to direct runoff away from wall face. Prevent runoff from adjacent areas from entering wall site.
7. At completion, if other work adjacent to wall is not to be done immediately (paving, landscaping, etc), grade top of backfill and provide temporary drainage to prevent water runoff toward the wall.

F. Cap Units: Install and top two courses of units with masonry adhesive.
1. Clear cap units and top course of segmental concrete units of debris and standing water before applying adhesive.
2. Apply masonry adhesive to top surface of top unit and place cap into position over projecting pins. Protect wall face from masonry adhesive.

3.03 PROTECTION

A. Prevent damage to wall and earthwork by subsequent construction and uncontrolled runoff until substantial completion; repair damage due to failure to protect wall or earthwork.

B. Do not operate heavy paving or grading equipment within 36 inches (1 m) from the back of the wall face.

C. Do not operate equipment with wheel loads in excess of 150 psf (1000 kPa) live load within 10 feet (3 m) from the wall face.

D. Do not place temporary soil or fill stockpiles adjacent to wall.

E. Replace damaged units prior to substantial completion.

END OF SECTION

SECTION 32 9223

SODDING

PART 1 GENERAL $_____

1.01 LOCATIONS

A. Provide sod on entire site except where planting beds indicated on landscape plan. No bare soil permitted.

1.02 REFERENCE STANDARDS

A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; Turfgrass Producers International; 2006.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sod: TPI, Certified Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq ft (100 sq m). Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.

PART 3 EXECUTION

3.01 LAYING SOD

A. Moisten prepared surface immediately prior to laying sod.

B. Lay sod immediately after delivery to site to prevent deterioration.

C. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches (300 mm) minimum. Do not stretch or overlap sod pieces.

D. Water sodded areas immediately after installation. Saturate sod to 4 inches (100 mm) of soil.

3.02 MAINTENANCE

A. General Contractor is responsible for the maintanance of sod until project closeout.

END OF SECTION

SECTION 32 9300

PLANTS

PART 1 GENERAL **$_____**

1.01 LOCATIONS

A. Provide plant materials, mulch and edging as indicated on landscape plan.

PART 2 PRODUCTS

2.01 PLANTS

A. Plants: Species, size and quanity identified in Landscape Plan, grown in climatic conditions similar to those in locality of the work.

2.02 MULCH MATERIALS

A. Mulching Material: Hardwood species wood shavings, free of growth or germination inhibiting ingredients.

PART 3 EXECUTION

3.01 RAINGARDEN INSTALLATION

A. Remove 18 inches of soil leaving compacted 1 to 1 side slopes rising to finished grade.

B. Deeply till and break apart basin floor beyond compaction.

C. Add 2 inches of leaf compost and till into soil.

D. Finish Raingarden by hand grading a flat, level basin and 2 to 1 side slope, as indicated on Landscape Plan.

E. Add 2-inches of shredded hard wood mulch, as with slopes

F. Install edging as indicated on Landscape Plan.

G. Ensure that downspout runoff enters the raingarden.

3.02 PLANTING

A. Set plants vertical according to the Landscape Plan.

B. Remove non-biodegradable root containers.

C. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches (150 mm) under each plant. Remove burlap, ropes, and wires, from the root ball.

D. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch (150 mm) layers. Maintain plant life in vertical position.

E. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.03 MAINTENANCE

A. Provide maintenance at no extra cost to Owner; Owner will pay for water.

B. Irrigate sufficiently to saturate root system and prevent soil from drying out.

C. Remove dead or broken branches and treat pruned areas or other wounds.

D. Neatly trim plants where necessary.

E. Immediately remove clippings after trimming.

F. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.

G. Control insect damage and disease. Apply pesticides in accordance with manufacturers instructions.

H. Remedy damage from use of herbicides and pesticides.

I. Replace mulch when deteriorated.

J. Maintain wrappings, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.

END OF SECTION